The Division Aviation Support Battalion

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE

by

PATRICK L. SHERMAN, CPT(P), USA
B.S., UNITED STATES MILITARY ACADEMY, 1979

Fort Leavenworth, Kansas
1991

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	7 June 1991	Master's Thesis, 1 Aug 90 - 7 June 91

4. TITLE AND SUBTITLE
Division Aviation Support Battalion

5. FUNDING NUMBERS

6. AUTHOR(S)
Major Patrick L. Sherman

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Command and General Staff College
Attn: ATZL-SWD-GD
Ft. Leavenworth, KS 66027-6900

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited

12b. DISTRIBUTION CODE
A

13. ABSTRACT *(Maximum 200 words)*

This study is a comparative analysis of the sustainment system for the Aviation Brigade as it currently exists and the proposed Division Aviation Support Battalion concept. This concept introduces a support system for the Aviation Brigade that is similar to that provided to the maneuver brigades in the heavy divisions.
The current system evolved out of the early Airland Battle doctrine developed in the early 1980s. However, the advance of technology and changing doctrine have changed the support requirements of the Aviation Brigade. Higher consumption rates of ammunition, fuel, and repair parts coupled with the requirement to conduct continuous operations for several days at a time over greatly increased distances have placed ever increasing demands on the logistical support system.
This study compares the advantages and disadvantages of each system in the areas of Arming, Fueling, and Fixing as measured by the sustainment imperatives: Anticipation, Integration, Continuity, Responsiveness, and Improvisation. This study recommends the adoption of the Division Aviation Support Battalion by the Army to meet the logistical demands of the Aviation Brigade on the battlefield.

14. SUBJECT TERMS	15. NUMBER OF PAGES
Aviation Maintenance; Division Aviation Support Battalion;	150
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	SAR

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THESIS APPROVAL PAGE

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE DIVISION AVIATION SUPPORT BATTALION by MAJ Patrick L. Sherman, USA, 150 pages.

This study is a comparative analysis of the sustainment system for the Aviation Brigade as it currently exists and the proposed Division Aviation Support Battalion concept. This concept introduces a support system for the Aviation Brigade that is similar to that provided to the maneuver brigades in the heavy divisions.

The current system evolved out of the early Airland Battle doctrine developed in the early 1980s. However, the advance of technology and changing doctrine have changed the support requirements of the Aviation Brigade. Higher consumption rates of ammunition, fuel, and repair parts coupled with the requirement to conduct continuous operations for several days at a time over greatly increased distances have placed ever increasing demands on the logistical support system.

This study compares the advantages and disadvantages of each system in the areas of Arming, Fueling, and Fixing as measured by the sustainment imperatives: Anticipation, Integration, Continuity, Responsiveness, and Improvisation. This study recommends the adoption of the Division Aviation Support Battalion by the Army to meet the increasing demands of the Aviation Brigade on battlefield.

Thesis Outline

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CHAPTER 1

INTRODUCTION

THESIS PROBLEM

Since the introduction of the helicopter on the modern battlefield, the Army has been struggling with the problem of how to provide the most efficient and effective maintenance and logistic support for its aviation units. The helicopter is a high consumer of Class $III_{(BULK)}$ jet petroleum (JP-4) fuel and Class IX repair parts, and it has placed an ever increasing demand on the Army logistical system. From the early 1960's and the Vietnam experience to the present, the Army has experimented with various support concepts in order to keep up with the maintenance and supply demands of aviation units.

This thesis examines the Army's current system of logistical and maintenance support for the Aviation Brigade and compares that system with the concept of the Division Aviation Support Battalion (DASB). It evaluates the current sustainment system and the DASB system with the Airland Battle doctrine as outlined in FM 100-5 and other doctrinal sustainment manuals. The purpose of the research is to determine if the proposed Division Aviation Support Battalion will improve the logistical and maintenance support for the Aviation Brigade.

THESIS STATEMENT

The Division Aviation Support Battalion will increase the effectiveness of the logistical support system for the Aviation Brigade over the present system as measured by the sustainment imperatives: Anticipation, Integration, Continuity, Responsiveness, and Improvisation.

BACKGROUND

Army Aviation was formed under the authority of the National Security Act of 1947, which formally separated the army ground and air forces into the Department of the Army and the Department of the Air Force.[1] At this time, the Army had approximately 400 divisional and non-division aircraft in its inventory, which were totally dependant on the Air Force for all aircraft maintenance above the organizational level.[2]

The Army depended on the Air Force for maintenance support until the implementation of the Joint Army and Air Force Adjustment Regulation (JAAFAR) 4-11-2 in 1949. These Administrative Provisions to Govern Field Maintenance Activities for Army Aircraft and Related Items of Equipment assigned the responsibility of increased aircraft logistical

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[1]R. Earl McClendon, Army Aviation 1947-1953, an Air University Documentary Research Study (Maxwell AFB, May 1954), 7.

[2]Jack O. Cromwell (Chairman), "Report of Study on Maintenance to Army Special Working Group," (12 July 1963), 1, Appendix.

support on the Ordnance Corps.[3] The Ordnance Corps organized several light aircraft field maintenance units to provide third echelon aircraft maintenance support. The Air Force continued to provide general support and depot level maintenance support while operator and unit level maintenance was performed by the organic divisional aviation detachments.[4]

In 1953, Army aviation logistics responsibility was changed from the Ordnance Corps to the Transportation Corps. At this time the transportation aircraft maintenance company was formed. This unit replaced the ordnance companies and performed the general support, or third, level of maintenance in between the organic divisional units and the higher echelon Air Force units.[5]

General support aircraft maintenance units were organized within the division in 1959. FM 1-100, Army Aviation, discusses a Transportation Corps Aircraft Maintenance unit which is organic to each division.[6] This unit was organic to the Armored Division trains and the

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[3]McClendon, 7.

[4]Randolph B. Wehner, "Command and Control of the Divisional Aircraft Maintenance Company: Was it Broken? Should We Have Fixed It?" (SAMS Monograph, U.S. Army Command and General Staff College, 1986), 4.

[5]Ibid., 5.

[6]U.S. Army, FM 1-100, Army Aviation, (Washington: Department of the Army, 1959), 203.

Infantry Division Transportation Battalion.[7] Some division commanders even placed this aircraft maintenance unit under the direct control of the aviation company commander.[8] This seems to be the root source from which began the unending cycle in which the division aviation support maintenance company would be passed back and forth between the aviation commander and the logistic commander.[9]

In the early 1960's, the Reorganization Objective Army Division (ROAD) became effective. The ROAD concept decentralized aviation among several different units and doubled the number or aircraft within the division to a total of 103.[10] At this time, the aviation maintenance company was formally assigned to the maintenance battalion within the division support command (DISCOM),[11] although the organic aviation maintenance units remained dispersed with each aviation unit. Each unit had to coordinated directly with the DISCOM for third level maintenance.[12]

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[7]P. C. Gast. "The Evolution of Aviation Organization Within the Army Division and an Appraisal of the ROAD Aviation Organization," (MMAS Thesis, U.S. Command and General Staff College, 1965) 39.

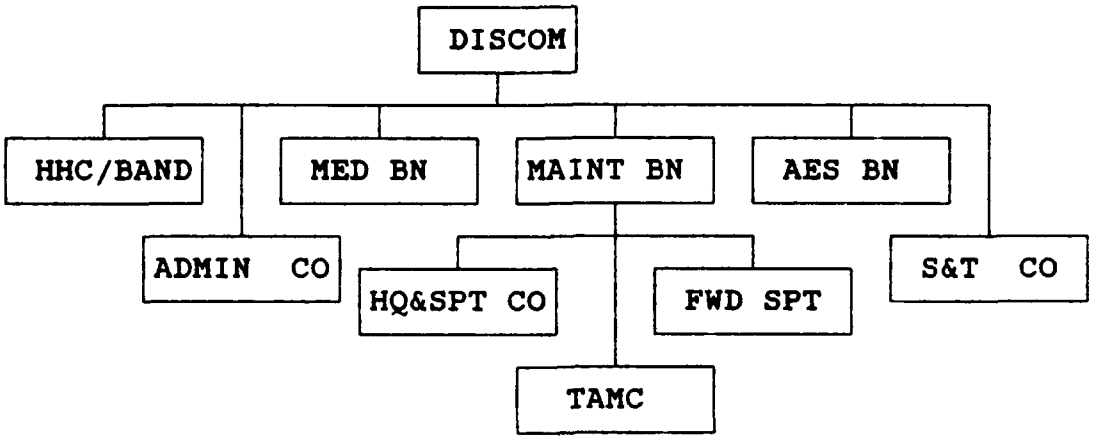
[8]Ibid., 49.

[9]Wehner, 6.

[10]Gast, 56.

[11]U.S. Army, FM 54-2, Division Logistics and the Support Command, (Washington: Department of the Army, 1961), 10.

[12]Wehner, 6.



ROAD DIVISION DISCOM WITH TAMC

FIGURE 1-1

In 1977, the Aviation Requirements for the Combat Structure of the Army III (ARCSA) study investigated the possibility of "pooling" divisional aviation assets, including the aviation maintenance company, under one battalion commander. The study determined that pooling would increase aircraft availability by 10-15%, reduce personnel requirements by consolidating supply and support positions while consolidating maintenance personnel, and relieve the maneuver units of the logistics burden. The consolidation of the prescribed load lists (PLL) would also improve supply responsiveness and efficiency. The Army began in the late 1970's to reorganize its divisions by placing the aviation assets into an aviation battalion with the Transportation Aviation Maintenance Company's (TAMC) organic to that battalion--see figure 1-2.[13]

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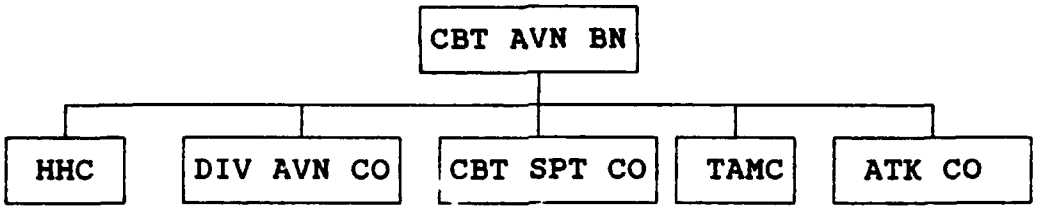
[13]Training and Doctrine Command, Aviation Requirements for the Combat Structure of the Army III (ARCSA III). (Fort Monroe, Va.; October 1976 Vol. III, T-7.



ARCSA III DIVISION AVIATION BN WITH TAMC

FIGURE 1-2

While this restructuring of divisional aviation was going on, the Army was looking to the future to reorganizing the entire division. This reconfiguration study, known as Division 86, was designed to "integrate technologically advanced systems, and to optimize human resources to be able to synthesize the design of heavy forces that would be capable of destroying the threat to NATO."[14]

This reorganization created the Air Cavalry Attack Brigade (ACAB) which later became the Cavalry Brigade - Air Attack (CBAA). This brigade was organized with a headquarters and headquarters company, a combat support aviation battalion (CSAB), one or two (depending on the theater of operations) attack helicopter battalions, and the division cavalry squadron. The TAMC was placed under the command and control of the CSAB--see figure 1-3.[15]

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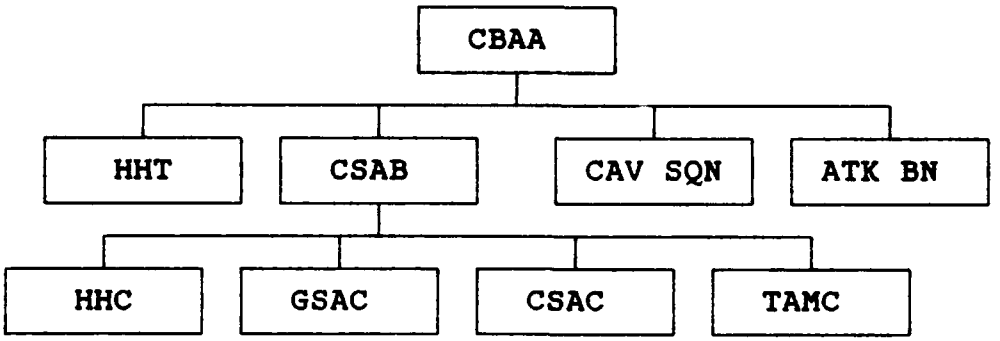
[14]U.S. Army Training and Doctrine Command, "Division 86 Final Report," (Ft. Monroe, VA, October 1981 with June 83 Addendum), 1, Executive Summary.

[15]Wehner, 8.



DIV 86/ACAB/CBAA W/TAMC IN CSAB

FIGURE 1-3

Placing the TAMC under the command and control of the CSAB apparently caused some problems with the appearance of favoritism within the brigade. Other units felt that the CSAB would receive preferential treatment. This perception was documented during the evaluation of the CBAA.[16] The corrective action taken by the force designers as part of the Army of Excellence (AOE) was to move the TAMC out of the brigade and to place it under the DISCOM as a separate company. The AOE force structure changes were designed to reduce the combat support and combat service support requirements wherever possible in order to maintain the fighting strength of the division, making it more deployable, while at the same time realizing savings that were required due to budget constraints and Department of Defense guidance.[17]

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[16]U.S. Army Combined Arms Center, "Independent Evaluation Report of the Cavalry Brigade, Air Attack (CBAA)," (Ft. Leavenworth, KS, 26 October 1982), p. II-6-21.

[17]U.S. Army Combined Arms Combat Development Activity, (CACDA), Field Circular (FC) 100-1, The Army of Excellence, (Ft. Leavenworth, KS; September 1984), pp. 3-4--3-5.

In addition to creating the Cavalry Brigade - Air Attack (CBAA), this reorganization influenced the organization within the DISCOM. The major changes which effected the aviation community were the movement of the TAMC into the DISCOM, the elimination of the three functional battalions within the DISCOM and placement of their operating companies under the headquarters of the Main Support Battalion (MSB), and the formation of the Forward Support Battalions (FSB) within the heavy divisions. These battalions are responsible for the effective management of all logistic assets within the brigade support area. The FSB's absorbed the forward maintenance, supply and medical companies that were originally assigned to their organic battalions within the Division Support Area (DSA) and provided the heavy brigade commander a single, responsive point of contact to meet all of his logistical support needs.[18]

The Division 86 structure satisfied the logistical requirements of the Aviation Brigade for that time. However, there were several emerging factors that would seriously impact on the ability for the support system to provide effective, responsive support.

First, the introduction of more technologically advanced airframes such as the AH-64 Apache, the UH-60A Blackhawk and the OH-58D helicopters, enabled Army Aviation to

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[18]Department of the Army, Field Manual 63-20, Forward Support Battalion, Armored, Mechanized and Motorized Divisions. (Washington D.C., 17 May 1985), pp. 1-2--1-3.

reach across the battle field as never before. Along with the advanced technology, the distances that the aircraft can travel and their all night/all-weather capabilities have drastically increased the man hours required to maintain these airframes.

Secondly, the Aviation Brigade came to be looked on more and more as a maneuver brigade.[19] But it did not have the combat service support available to it that other maneuver brigades had, even though the Aviation Brigade was the highest consumer of Class III and Class IX on the battlefield. Ground maneuver brigades had a Forward Support Battalion (FSB) in direct support. This FSB was a single point of contact that provided a variety of services. These included division-level logistical support of classes I, II, III, IV, V, VII and IX supplies. The FSB provided direct support maintenance to attached and supported units of the supported brigade, coordinated and supervised nonorganic transportation resources to support brigade operations, and provided limited capability to carry reserve supplies. It also planed and conducted rear area protection operations as assigned by the supported brigade commander and coordinated CSS assets in the Brigade

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[19] According to U.S. Army, FM 1-111, Aviation Brigade, (Washington: Department of the Army; 1986), 1-2, "The tactical employment of the aviation brigade differs little in principle from the employment of the ground maneuver forces." It has been my experience that more and more division commanders are beginning to look on the aviation brigade as an additional maneuver brigade that they can task organize with other combined arms forces.

Support Area (BSA) that are not organic or attached to the supported brigade.[20]

The Aviation Brigade, however, did not have a dedicated FSB allocated to it. It was to receive support from several different sources to include the Main Support Battalion, the AVIM company, possibly an FSB within another brigade sector if the aviation brigade has units working in that sector, the Division Material Maintenance Center, and possibly CORPS level assets for critical supplies such as fuel and ammunition.[21] This arrangement caused several problems. Initially it was perceived that the AVIM was not responsive to the needs of the Aviation Commander. Since the AVIM commander worked directly for the DISCOM Commander there were constant differences of opinion as to what the AVIM commander should be doing and who should be directing his efforts. Conflicts in the scheduling of training and maintenance priorities were a constant source of irritation for both sides. The Brigade S-4 also had his hands full in trying to coordinate not only aviation maintenance support with the AVIM company, but also trying to coordinate other support requirements for the rest of the Brigade. Although the majority of the requirements were filled by the Main Support Battalion, the Aviation

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[20]FM 63-20, 1-6.

[21]U.S. Army, FM 63-2-2, Combat Service Support Operations, (Washington: Department of the Army; 1985), Chapters 4, 5, and 6.

Brigade was not the only customer that the MSB serviced. The MSB was also supporting the other maneuver brigades through their dedicated FSB's and the rest of the divisional assets to include the Division Artillery, Military Police, Military Intelligence, Chemical, and Engineer units, to name just a few. These problems brought the whole question of support for the Aviation Brigade under scrutiny once again.

In order to reduce the problems of dealing with so many different units and to increase the aviation brigade's overall warfighting capabilities, the Army chartered the Aviation Logistics Study Group (ALSG) in December 1987. The ALSG was tasked to "determine initiatives across the logistic spectrum that would enhance the warfighting capability of Army aviation forces."[22] One of the initiatives that came out of that study was the Division Aviation Support Battalion (DASB). The DASB was to serve the Aviation Brigade in the same way that the Forward Support Battalions served the maneuver brigades in the Heavy Divisions.[23]

The DASB is designed to provide the aviation commander a single point of contact for logistical support that is capable of planning, coordinating and executing all maintenance and supply operations, provide a proactive support base, able to anticipate meeds with no priority conflicts, and

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[22]US Army, Independent Evaluation Report (IER) For The Division Aviation Support Battalion (DASB), (Ft. Leavenworth, KS., December, 1988), p. 18.

[23]IBID., 18.

also to provide a habitual support relationship utilizing common standard operating procedures (SOP) and providing immediate and direct response. The proposed DASB would be centered around the AVIM company already under DISCOM. In addition to this company there would be a Headquarters and Supply Company (HSC) and a Ground Maintenance Company (GMC).[24]

From December 1987 until the present the Army has conducted various evaluations and tests of the DASB concept. At this time the Army has agreed in concept to the DASB and is conducting its final testing in Germany.

METHODOLOGY

This study compares the DASB concept with the present system to determine the advantage to the Aviation Brigade. The intent of the author is to evaluate the two systems from a doctrinal perspective. Therefore, the initial criteria used for this comparison will be drawn from the six sustainment functions outlined in FM 100-5 "Operations" -Manning, Arming, Fueling, Fixing, Transporting and Protecting.[25]

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[24]MAJ M. Wayne Converse, "Division Aviation Support Battalion Update," Army Aviation (February, 1990): 44-45.

[25]U.S. Amy, FM 100-5, Operations, (Washington: Department of the Army; 1986), 60-62.

THE SUSTAINMENT FUNCTIONS

The six sustainment functions were used as a baseline for establishing what criteria should be used to compare the two logistic systems being evaluated. A thorough investigation of all six functions would go beyond the scope of this paper. Therefore, this study will conduct an examination of only those functions that commanders feel are the most critical to their combat operations. These are known as the 35MM functions: Classes III and V resupply, maintenance and medical. A unit can continue to operate under adverse conditions for a limited time. But its ability to sustain any type of combat operations will be extremely limited if it cannot obtain the required fuel, ammunition, and maintenance support to keep his weapons systems in the fight. Additionally, if there is not adequate medical care provided, it could have a devastating effect on the morale and ability of a unit to continue combat operations. Since the functions of protecting and transporting do not fall into the four categories of the 35MM system, these functions will be eliminated from the scope of this paper.

In the area of medical, there are no changes between the current logistical system and the DASB. The DASB will not have additional medical personnel assigned and the Aviation Brigade Headquarters and Headquarters Company will retain its medical section. The basic medical support will still be provided by the Main Support Battalion. Therefore, the

medical function will not be included in the discussion of this paper. Since medical is the only part of manning of the manning function that would be evaluated under the 35MM

system, the manning function will not be evaluated as one of the criteria for this paper.

Below is a brief discussion of the three sustainment functions that will be used as criteria for the evaluation of the logistic systems: Arming, Fueling, and Fixing. A brief discussion of the other three sustainment functions that will not be used - Manning, Protecting, and Transporting, will follow with a brief explanation as to why they were not selected.

ARMING

FM 100-10 describes the arming function as the ability of the logistics system to provide "the right mix and quantities of ammunition to the right place and at the right time."[26]

The DASB must be able to provide ammunition in a timely manner to all elements of the Aviation Brigade. Today's weapons systems are not only extremely lethal, they depend on high quality electronic and optical devices for accuracy and coordination. Not only is the technology different, but the

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[26]U.S. Army, FM 100-10, Combat Service Support, (Washington: Department of the Army; 1988). 6-1.

variety of the ammunition and weapons makes replenishing arms, equipment, and ammunition an extremely challenging and arduous task. For example, the Division Cavalry Squadron has M3 Cavalry Fighting vehicles (CFV) that fire tube-launched, optically-tracked, wire-guided (TOW) missiles and 25MM ammunition. It also has AH-1S Cobras that fire TOWs, 2.75 Folding Fin Aerial Rockets (FFAR) of which there a variety of different warheads, and 20MM ammunition. This does not include all of the ground weapon systems such as individual weapons and the organic 4.2" mortars.[17] The Attack Battalions also have their own particular type of ammunition that include Hellfire missiles, 30MM, and 2.75" FFARs.

Keeping track of and resupplying the variety of munitions employed by the Aviation Brigade is therefore a challenge. Because of its criticality, this function will be included in the analysis.

FUELING

FM 100-5 identifies this sustainment function as being extremely critical in light of the high-performance air and ground vehicles of today's Army. Although these vehicles provide the commander with outstanding flexibility and mobility, the fuel consumption rates of these vehicles will make great cumulative demands on the sustainment system. This

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[17]U.S. Army Command and General Staff College Student Text 100-3, G-3 Battle Book, (Fort Leavenworth, Kansas; 1989), 3-2.

will require a high volume of fuel resupply just to maintain routine consumption rates.[28]

The Aviation Brigade has a wide variety of equipment that must be fueled on a 24 hour basis. In addition to MOGAS and Diesel fuels, the DASB will have to provide large quantities of JP-4 for the helicopters.

This creates the problem of having enough carrying capacity to resupply the brigade in the bulk fuels that are required and also ensuring that these fuels are in the right quantities to refuel both tracked vehicles and helicopters. Since current doctrine emphasizes continuous operations, the consumption rates will most likely be higher than any of the maneuver brigades. Therefore, the DASB will have to ensure that it can meet the requirements in a timely manner.

The DASB concept has made major changes in the way the aviation brigade will receive its POL support. Therefore, this sustainment function will be included in the analysis.

FIXING

During all combat operations, time will be critical and replacement equipment will be scarce. "The force whicn is better able than its opponent to recover damaged equipment and return it to service rapidly will have a clear advantage in generating and concentrating combat power." [29] Therefore, it

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[28]FM 100-5, 61.

[29]Ibid., 61.

is imperative that the DASB be able to provide quick, effective and efficient maintenance support to the brigade.

More so than the rest of the divisional brigades, the Aviation Brigade contains several units and items of equipment that will be essential to the Division Commander's ability to successfully accomplish his mission. The cavalry squadron is the eyes and ears of the division. If the squadron does not receive timely maintenance support for repair of its M3 CFVs and AH-1S Cobra and OH-58 Scout helicopters, then the Division Commander's ability to find the enemy and gather timely and accurate intelligence will be significantly reduced. The attack battalions are equipped with the most effective tank killer on the battlefield today, the AH-64 Apache. An attack battalion, attacking in mass, can destroy an enemy regiment and make it completely combat ineffective in a short time. This battalion is of extreme importance to the Division Commander.

But these are not all of the assets that the DASB has to support. There are also the 3 EH-60 "Quick Fix" helicopters, which can provide an excellent electronic warfare capability to the division, and the OH-58D helicopter that not only provides an excellent all weather, day or night scout capability, but is used to coordinate with the Division Artillery to call indirect fires in on the enemy throughout the battlefield.

The DASB has made major changes in both the structure and concept of support for both air and ground equipment. Since there are major changes in this area it will be included in the discussion.

MANNING

Manning, as defined in FM 100-5, is the ability of a unit to support operations on a continuous basis, to assemble, transport, and distribute personnel as the commander requires while conserving their fighting strength. In addition to these functions, manning also includes health services, administrative support, chaplin activities, morale support, replacement operations and leadership.[30]

Under the current system of support, the manning functions conducted in the brigade area are provided by the MSB with augmentation from Corps.[31] Since there is essentially no difference between the DASB and the present support system this function will not be included in the comparative analysis.

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[30]Ibid., 60-61.

[31]U.S. Army, FM 63-2-2, Combat Service Support Operations, Armored, Mechanized, and Motorized Divisions, (Washington: Department of the Army; 1985), 8-1--8-6.

PROTECTING

Protecting the force includes all efforts, both passive and active, taken by the unit to protect the sustainment effort and its assets.[32] Under the current system, each support activity is responsible for its own protection. For example, a forward area refueling point set up by the attack battalion is protected by the personnel assigned to operate it. This is accomplished by the use of camouflage to prevent detection and establishing a defensive perimeter in case of attack. There are no additional assets available to provide additional security.

Under the DASB concept protecting the force is the same. The DASB will provide protection for the Aviation Brigade support area. These are primarily the elements of the DASB.[33] The DASB will be providing protection for the support assets that it owns and other assets within the Brigade Support Area (BSA). However, this is very similar to the present system. The only difference again is the command and control element. Under the current system, the Brigade Executive Officer is responsible for security of the support assets. Under the DASB, the DASB commander is responsible. Since the differences between the two systems is minimal, protecting the force will not be discussed.

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[32]FM 100-5, 62.

[33]FM 63-23, 5-1.

TRANSPORTATION

"Transportation is the means of distributing supplies, evacuating damaged equipment, and moving personnel to where they are needed."[34] Although this is an important part of sustaining the force, the difference between the current system and the DASB concept as it applies to transportation are insignificant.

Under both systems, the Aviation brigade and the DASB only have enough organic transportation assets to keep themselves mobile. Therefore, if additional transportation assets are required for maintenance evacuation, resupply operations, or other unforseen requirements, both the Aviation Brigade and the DASB would have to go the Movement Control Officer in the DISCOM to coordinate for this additional support.[35] The only real difference is who performs the coordination. Therefore, the transportation sustainment function will not be included in the analysis of this paper.

THE SUSTAINMENT IMPERATIVES

In order to keep the evaluation within a doctrinal context, the method for evaluation of the three sustainment functions will be based on the sustainment imperatives discussed in Airland Battle sustainment doctrine. These

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[34]FM 63-2-2, 7-1.

[35]U.S. Army, FM 63-23, Aviation Support Battalion (Preliminary Draft), (Washington: Department of the Army; 1990) 2-6.

sustainment imperatives, as outlined in FM 100-5 and FM 100-10, are: Anticipation, Integration, Continuity, Responsiveness, and Improvisation.[36] The sustainment imperatives were derived to assist keeping the CSS commander and his staff focused when involved in sustaining the battle. The major objective is to overcome the natural inhibiting effects of the logistics "tail" and allow the maneuver commander to seize the initiative, take advantage of opportunities, and achieve and maintain operational and tactical advantages.[37]

ANTICIPATION

Anticipation is the ability of the combat service support leader and his staff to foresee future events and requirements by understanding the tactical commanders plan and concept of operations. While supporting current operations, they plan for future operations and attempt to foresee what will be required. This focus is mainly on the next forty eight to seventy two hours since the CSS leaders usually cannot significantly effect operations in shorter time than that.[38]

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[36]FM 100-5, 62-63 and FM 100-10, 1-10.

[37]FM 100-10, 1-9--1-10.

[38]Ibid., 1-10.

INTEGRATION

Integration of combat service support into all areas of the operations plan is critical to success. The CSS units must be organized to give the maneuver commander the greatest amount of flexibility and freedom of action. A key element of integration is to be bold and innovative in order to give the supported forces the ability to do more than the enemy believes is possible. This implies that sustainment operations must also be thoroughly integrated into any deception plan. The bottom line is to ensure unity of effort between the sustainment forces and the maneuver forces to achieve the maximum benefits possible.[39]

CONTINUITY

Continuity is the ability to maintain the combat force through uninterrupted support without directly diminishing the ability of the maneuver commander to conduct operations. If the forces must pause for rebuilding and replenishment, it could impede the momentum of the operations and cause the maneuver commander to lose the initiative. While combat operations may enter periods of inactivity, sustainment operations do not. In fact, during periods of inactivity by the combat force, sustainment activities usually increase in order to rebuild units and bases of support. During operations, CSS leaders focus on maintaining the momentum of

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[39]FM 100-5, 62 and FM 1001-10, 1-10.

support for the operations. When the pace slackens for combat operations, CSS units must redirect their efforts to reconstitution of the force and replenishment of the sustainment base. CSS leaders must ensure that operations are not effected by a lapse in support or by unforeseen events. In this way, the CSS commander and his staff lend depth to the commander's operations and aid in retaining the initiative and momentum.[40]

RESPONSIVENESS

Responsiveness is the ability to react quickly in a crisis situation or on short notice. Airland Battle doctrine demands that commanders take the initiative and seize fleeting opportunities to achieve tactical and operational success. The CSS units must be as responsive as the maneuver units in order to maintain support and meet the rapidly changing requirements on short notice. A historical example of responsiveness on a large scale was the ability of Third Army redirect its support operations during the Battle of the Bulge in December, 1944, from an easterly direction to a northerly one. The CSS units were able to respond on very short notice to the needs of the changing tactical situation and thus made an allied victory possible.[41]

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[40]FM 100-5, 62-63 and FM 100-10, 1-10.

[41]FM 100-5, 63 and FM 100-10, 1-10.

IMPROVISATION

Improvisation allows CSS planners to show how innovative and bold they can be. No matter how much preplanning is conducted, there always seems to be something that goes wrong. Enemy action, interdiction of rail, water, air or road lines of communication, or natural disasters can throw the best laid plans into ruin. A historical example of this is the famed "Red Ball Express". Because the allied advance had progressed across France faster than anticipated, supplies were critically short, especially fuel. Trucks from all over europe were taken out of their units and placed under Third Army control in order to meet the demands for fuel.

Extra ordinary methods and efforts may be required to accomplish the mission. Improvisation is not considered a substitute for anticipation, but a necessary complement to it.[42]

ANALYSIS

Chapter Three will discuss the structure of the Aviation Brigade and outline the current logistical support structure as it applies to the three sustainment functions of Arming, Fueling, and Fixing. Each function will be evaluated using the sustainment imperatives outlined above. The strengths and weaknesses of the current system will be

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[42]FM 100-5, 63 and FM 100-10, 1-10.

identified and discussed to provide a basis for comparing the current system with the DASB concept.

Chapter Four will describe the proposed structure of the DASB and how it will provide support to the Aviation Brigade in the same functional areas of Arming, Fueling, and Fixing. Each function will also be analyzed using the sustainment imperatives as the evaluation criteria to identify strengths and weaknesses.

Chapter Five will compare the two systems. To assist in the evaluation, a decision matrix will be utilized for each sustainment function. The states of nature will be the sustainment imperatives. All of the imperatives are equally important, they will be evaluated on the same scale.

SIGNIFICANCE OF THE STUDY.

A comprehensive analysis of our aviation maintenance system in support of the Aviation Brigade establishes the current capabilities of our combat support organization to meet the demands of airland battle doctrine. Our current system of logistic support for the aviation brigade and the doctrine employed are currently being tested on the sands of Southwest Asia. Changing technology and doctrine require ongoing analysis. This turbulence invariably produces shortfalls in support as the support units strive to keep up with the ever increasing demands placed on them. Field Manual 100-10 states:

> To operate on this fluid AirLand Battlefield, forces must possess a higher degree of self-sustainability than ever before. They must be sustained by a support structure with mobility and speed which approaches their own. Units...must be capable of great flexibility in supporting maneuver forces which will be constantly changing direction and tactics, moving from attack to defense and back in order to seize and exploit opportunities.[43]

Today's battlefield, with it's modern equipment and advanced technology, is constantly changing, causing greater and greater demands on the logistical support system. With the introduction of the helicopter onto the battlefield, and its subsequent advancements in technology and lethality, there has been placed an increasing strain on the logistical system. The demand for fuel, ammunition and maintenance is a never ending cycle. Therefore, new ideas and concepts in how to sustain this force must be developed and analyzed if we are to have even a chance of keeping up with the needs of tomorrow's battlefield.

Pitfalls may be encountered, though, if the changes in organization and doctrine are not conducted in a deliberate, well thought out, and organized manner. The current changes in Airland Battle Doctrine have not been fully implemented in all of the forces, to include active, reserve, and National Guard. Even so, the Army is progressing on with the concept of Airland Battle-Future. Airland Battle-Future seems to be the natural progression from Airland Battle doctrine. However, there are significant differences. It envisions a

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[43]FM 100-10, 1-6.

battlefield than is nonlinear, less dense with fewer forces in both armies, and more open with large gaps between major units. Forces will be smaller, weapons systems more lethal, and the areas covered by forces can include up to several hundred miles within one or two days.[44]

Current Airland Battle doctrine lists six combat sustainment functions for sustaining operational and tactical efforts. These functions provide the framework within which the aviation tactical commander can maintain the initiative, remain agile, synchronize his efforts, and fight in depth - the tenets of airland battle.[45] This study analyzes the doctrinal concepts for sustainment for the Aviation Brigade, provides an additional source for examining the current framework within which the aviation community is sustaining its forces, and compares that system with the proposed concept of the DASB to determine if there is a need to change the way we are currently providing support to the aviation brigade. If a need for change is identified, then a doctrinal evaluation of the DASB will provide some insight as to the viability, practicality, and feasibility of the DASB concept.

The effectiveness of our current sustainment doctrine for the Aviation Brigade is currently being tested in the deserts of Saudi Arabia, Kuwait and Iraq under the Desert

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[44]Major General Stephen Silvasy Jr., "Airland Battle Future: The Tactical Battlefield," Military Review, (February, 1991), 3-5.

[45]FM 100-5, 15-17.

Shield and Desert Storm operations. The new DASB concept is also being tested. Although the lessons learned from these operations will not be available for analysis and inclusion in this paper due to time constraints, some of the operations conducted by the ground forces are already bringing the question of sustainment for the aviation brigade to the forefront again. Several divisions moved over fifty miles behind friendly lines into an austere environment in order to outflank the Iraqi forces. Then, when the word was given, these same armored and mechanized infantry divisions rolled through the Iraqi and Kuwaiti deserts for distances over a hundred miles in just a matter of days.[46] There is no doubt that sustaining an operation of this scale, over those distances, in a desert environment, severely tested the combat support system.[47] The problems that the Aviation Brigades

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[46]Sean D. Naylor, "Early Numbers Tout Weapons Performance," Army Times 34 (March 1991): 6. The 3rd Armored Division conducted a night roadmarch which covered over 120 miles during Operation Desert Storm.

[47]An example of this would be the requirement for the Corps petroleum company to provide fuel to the aviation brigade as it moved over these great distances. 5,000 gallon tankers and HEMMTs can travel approximately 20 miles per hour, which should be considered reasonable over that type of terrain. They would be able to make the trip in 5 hours. Then the ammunition and fuel would have to be transloaded, which should take approximately another one to two hours. The return trip will take another five hours for a total of about twelve hours. Unless there are replacement drivers, which there normally are not, the crew would need to rest before they could make the trip again. This also assumes that the division does not continue past the 100 mile mark, which is an assumption that cannot always be made, as shown by the 3rd Armored Division.

encounter during these operations under the different systems will have a significant impact on which way the Army will move in selecting the logistic support system for the aviation brigade.

This analysis will provide an insight into the possible shortcomings of both systems and offer recommendations on how the army might be able to solve these problems either through changes in force structure or changes in doctrine and procedures. The after action reports from Desert Shield and Desert Storm will also provide great insights into the shortcomings of our logistical system. This study will be helpful in integrating those lessons learned to ensure that the CSS system is able to keep up with our changing army and doctrine.

SUMMARY

This chapter has outlined the thesis problem of providing the best logistical support for the Aviation Brigade. It has discussed the background of Army aviation maintenance and how we arrived in our current situation. Finally, the methodology for the evaluation and comparison of the two systems was explained. Chapter Two will provide a brief review of the literature used in the research of this paper. Chapters Three and Four will discuss both the current logistical system and the DASB concept and provide an analysis of each system based on the sustainment functions of Arming,

Fueling, and Fixing as evaluated by the sustainment imperatives. These chapters will highlight the strengths and weaknesses found in each system. Finally, Chapter Five will compare the two systems based on the criteria discussed above. Each sustainment function will be evaluated using a decision matrix. The sustainment imperatives are the states of nature that the two systems are evaluated against. The final sections of chapter five will cover the conclusions, recommendations and areas of interest that have been identified which require further study.

CHAPTER 2

REVIEW OF LITERATURE

INTRODUCTION

The purpose of this chapter is to provide an overview and evaluation of the current literature which deals with the logistics support provided to the Aviation Brigade. A thorough search of the literature shows there is a large body of knowledge dealing with the various aspects of supporting the Aviation Brigade, but very little of it deals with evaluating this support as it relates to the six sustainment functions outlined in FM 100-5.

There is a great deal of information provided on the problem of command and control over the AVIM company, where should it be placed and how it should be employed. Inherent in these articles is a discussion of the aviation community's problems with the present logistical system.

At the present time, there is no single source document where the author could obtain comprehensive information on the U.S. Army support doctrine, procedures, organization and equipment as it pertains to the requirements of the Army of Excellence Aviation Brigade. There is, however, a large conglomeration of literature that deals with each of these topics individually. Therefore, each area must be looked at individually and pertinent issues drawn out for

evaluation to provide an accurate assessment of the support capabilities and the logistical requirements.

Because there is no single source document that covers the organizational support capabilities and requirements for the Aviation Brigade, the study of logistic support for the aviation brigade is increasingly complex. This reveals the great complexity of the logistical system which highlights an even larger weakness. The Army's logistical system is becoming more complex and sophisticated, possibly to the point where it is too large and complex to adequately meet the needs of the various operational units that it is to support.

The unsystematic body of literature surrounding logistics capabilities and support requirements mandates the use of a model to insure a comprehensive and orderly review is completed. The most useful model indicates that the existing body of knowledge is divided into four categories:

1) U.S. Army Doctrinal literature

2) Historical background and analysis

3) Support methods and procedures

4) Research and development studies[1]

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[1]Maj. Walton C. Carroll, "U.S. Army Petroleum Supply Capability Is Insufficient To Meet The Demands Of Army Aviation On The Modern Battlefield", (MMAS Thesis, U.S. Command and General Staff College; 1988), 19. This model was adopted for use in this paper to assist in the thorough evaluation and analysis of the literature.

This thesis considers those studies dealing with the evaluation of the current system and the Division Aviation Support Battalion concept. They consider the problems experienced throughout the army with the overall support system for the Aviation Brigade. They also provide an excellent history of the support system for the Aviation Brigade and provide insight into the development of the current system. This research provides a brief description of several recommended changes to the present system to include the DASB concept.

The agency responsible for doctrine development and evaluation is the United States Army Training and Doctrine Command (TRADOC).[1] The TRADOC mission is broken down into major elements that include combat developments, training, mobilization planning and training support operations. Looking at the combat developments element, TRADOC develops operational concepts for military operations. It then translates these concepts into feasible battlefield strategies. From this strategy it develops organizational force structures to insure that units are equipped to fight in accordance with these operational concepts. Finally, it

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[1]U.S. Army, Regulation 5-13, Management, (Washington: Department of the Army; 1979), 4-2; and Training and Doctrine Command Regulation 10-41, Organization and Functions Mission Assignments, (Fort Monroe, Va.; 1981), 3.

develops future equipment requirements and writes the applicable doctrinal publications.[3]

TRADOC uses a model known as the Concept Based Requirements System to translate battlefield concepts into requirements for research, development, acquisition, and material fielding.[4] Based on this model, TRADOC evaluates the Army's capabilities and identifies deficiencies within the force. From this detailed analysis, TRADOC develops concepts that may generate new doctrine or change the force by way of new force designs, new material fielding or tactics. When a deficiency in the doctrine is noted and a change is required, TRADOC publishes the TRADOC 525-series of pamphlets with the doctrinal concepts outlined in them. Upon publishing a concept in a TRADOC 525 series pamphlet, it constitutes direction for that concept to be included in the appropriate field circulars, manuals, training circulars, instruction in the military school system and evaluation program.[5] The 525

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[3]Headquarters, Training and Doctrine Command Regulation 10-41, Organization and Functions Mission Assignments, (Fort Monroe, Va; 1986) 3.

[4]Headquarters, Training and Doctrine Command Regulation 11-7, TRADOC Doctrinal and Training Literature Program, (Fort Monroe, Va.; 1986) 2-1.

[5]Training and Doctrinal Command Pamphlet 310-6, Armywide Doctrinal and Training Literature (ADTL) Development and Preparation, (Fort Monroe, Va.; 1985), 2-2.

series of pamphlets are the means of army-wide distribution for new doctrine and standardization in the fielding process.[6]

The Armywide Doctrinal and Training Literature (ADTL) Program defines the policies, procedures and standards used for doctrinal development and distribution. This program also establishes the service school instructors as the Army's principle authors of doctrinal and training publications.[7] Because new concepts can come from several sources to include combat developers and individuals that have a certain area of interest, TRADOC retains the overall responsibility for concept integration and development to insure standardization and timely dissemination.[8]

When the Army adopted AirLand Battle as the doctrine for the 1980's, it had far reaching effects on the Army's literature, especially in the area of Combat Service Support. This situation is still evident and is brought out well in a study entitled: "Rear Operations Doctrine A Search For Doctrinal Consistency Within The Combat Service Support Field Manuals".[9] The United States Army Command and General Staff College Reference Book 20-12 is a doctrinal literature master

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[6]Carroll, 21.

[7]TRADOC Pamphlet 310-6, i.

[8]Headquarters, Training and Doctrine Command Regulation 1-17, TRADOC Doctrinal and Training Literature Program, (Fort Monroe, Va.; 1985), 1-3.

[9]MAJ Frank Clubb and MAJ Steve Mills, "Rear Operations Doctrine A Search For Doctrinal Consistency Within Combat Service Support Field Manuals," (Nov., 1986).

index, produced by the college, that provides definitions for common terms, lists all current Field Manuals (Doctrinal), new Manuals that are scheduled for publication and also contains a comprehensive listing of the TRADOC 525 series pamphlets.

The latest edition of Airland Battle doctrine, FM 100-5 Operations, reaffirms the initial doctrine that was introduced in 1982. Based on this latest edition of FM 100-5, Airland Battle doctrine "furnishes the authoritative foundation for subordinate doctrine, force design, material acquisition, professional education, and individual and unit training."[10]

Although initially the army literature was somewhat disorganized, there has been a tremendous effort to bring the various manuals up to date. Although many manuals are still in revision, it appears that the majority of the Army has caught up with our latest doctrine. To ensure that the latest manual is being used when inquiring into a particular topic, the Department of the Army Pamphlet 25-30 should be used.[11]

The Army foresees FM 100-5 as a document that "presents a stable body of operational and tactical principles rooted in actual military experience and capable of providing a long-term foundation for the development of more transitory

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[10]U.S. Army, FM 100-5, Operations, (Washington: Department of the Army; 1986), i.

[11]Department of the Army Pamphlet 25-30, Index of Publications, published quarterly.

tactics, techniques, and procedures."[12] Since the present doctrine is rooted in past experiences of not only American history but of other nations throughout the world, an historical review of the way we sustain our army was necessary as a foundation on which to base my research. Therefore, the following sections will present a brief overview and evaluation of the literature.

HISTORY

Providing an army with sufficient supplies is always a major concern for military commanders. There are numerous examples of leaders whose campaigns were dictated not so much by the strategic, operational or tactical concerns, but more by the logistical requirements of the army with which they were fighting. In the seventeenth century, armies were tied to fixed bases of support due to the poor transportation system and the inability of any area to sustain a large army for prolonged periods.[13] Military commanders were well aware of the vulnerability of their armies to their lines of communication. In fact, this was often time a prime target for these same commanders in order to defeat the opposing army

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[12]FM 100-5, i.

[13]Gunther E. Rothenberg, "Maurice of Nassau, Gustavus Adolphus, Raimondo Montecuccoli, and the 'Military Revolution' of the Seventeenth Century," Makers Of Modern Strategy, edited by Peter Paret, (Princeton, N.J.; 1984), 32-33.

or to make it withdraw from a position of advantage. Napoleon used this tactic very well during his campaigns.[14]

Since the advent of the "blitzkrieg" in Europe at the beginning of World War II, the complexity and nature of providing adequate combat service support to the advancing armies has been an item of increasing interest. The problem of sustaining a highly mechanized and mobile force were highlighted by the logistical problems encountered by both the Germans and the Russians when attempting to employ the strategic and operational envelopment.[15] In fact, sustaining the force has maintained such an important part of our thinking that "the US Army's ability to sustain its operations is more important as an element of combat power than ever before."[16]

Hew Strachan's European Armies and the Conduct of War gives a good background into the theory and practice of land warfare in Europe. The book outlines three periods of European warfare and presents them in chronological order. The first period covers the years from the end of the Thirty Years War to the revolutionary wars of 1792. The second addresses the time through Marlborough, Napoleon, colonial warfare, and the beginning of mobile warfare: Blitzkrieg. The

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[14]Hew Strachan, European Armies and the Conduct of War, (Winchester, Mass.; 1983), 44.

[15]Rothenberg, 297.

[16]FM 100-5, 59.

final era, defined by the author as Modern War, begins with the defeat of Hitler.

The author discusses how industrialization, mechanization, and military thought have impacted on the mechanics of warfare. What makes this book useful is the emphasis that the author places on the effects that supply has had on the waging of war. Throughout the book, the author discusses the impact of having large armies, the increase in mechanization of the forces, and the increase in consumption of bulk items such as ammunition, fuel and spare parts.

Martin L. Van Creveld's Supplying War discusses the problems facing commanders from the sixteenth century up to the end of World War II. The majority of the discussion in this book deals with events during the nineteenth and twentieth centuries. The author discusses the various problems that faced several commanders during different periods, how each of the commanders analyzed, evaluated, and solved the problem, and then examines why these commanders were successful. Some of the decisions made are still valid when based on considerations of modern doctrine today. Examples of this are whether or not to fight on a broad or a narrow front, or whether or not to leave your own lines of communication for a period of time in order to gain an operational advantage.[17]

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[17]Martin L. Van Creveld, Supplying War, (Caimbridge, UK; 1977).

The Sinews of War: Army Logistics 1775-1953 provides a comprehensive and extensive analysis of U.S. Army logistics. Although it provides an excellent source for the description of the systematic changes of the U.S. Army from the Revolutionary War to the Korean conflict, it also gives a good background on the expansion of Army Aviation after the separation of the Air Force from the Army in 1947. Huston raises some initial questions about sustaining an aviation force but only hints at the problems that are encountered today.[18]

America's First Battles is a compilation of eleven separate essays describing the first ten battles of the U.S. Army, each by a nationally known specialist in that particular period of military history. Each battle is the first battle of a particular war that America has been involved in.[19]

The book begins in New York in 1776 and extends through the Battle of Ia Drang Valley, the first major battle fought by American troops against North Vietnamese regular forces. The book concentrates on the pre-war preparations of the Army and the effects these preparations had on the first battle.

The essay dealing with the Ia Drang Valley was a very important turning point for the U.S. military. This was the

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[18]James A. Huston, The Sinews Of War: Army Logistics, 1775-1953, (Washington, 1966).

[19]Americas's First Battles, 1776-1965, Edited by Charles E. Heller and William A. Stofft (Lawrence, Kansas; 1986).

first use of an air mobile division, the 1st Cavalry Division, in combat. Although the essay did not discuss the logistical implications of this feat, they become increasingly obvious if the operation is looked at with logistics in mind. Army reports indicate that artillery batteries had been moved by air sixty-eight times and infantry battalions moved forty-eight times in a little over one month.[20] The 1st Cavalry Division also used helicopters in the traditional role of resupply and medical evacuation that had become popular during the Korean conflict. The implications of this are an increased need for fuel, spare parts, ammunition, and a maintenance system able to respond to the rapid pace of the now helicopter dominated battlefield.

The review of historical literature is able to lay the basic foundation for this study. Although wars are written about for as long as they have been fought, very little time is devoted to analyzing the logistical framework of the battlefield and how it impacts on those wars. Maybe because the logistics aspect is less romantic or glorified than the actual fighting, most authors choose to ignore the impact that logistics has on the battlefield and concentrate more on the tactical aspects instead. It has been my experience that most individuals involved in fighting in today's army are still overly preoccupied with the tactical aspects of the battle and

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[20]George C. Herring, America's First Battles, Ia Drang Valley, (Lawrence, Kansas; 1986), 325.

fail to realize that logistics can have an incredible impact on the way the tactical plan unfolds, especially if proper planning and preparations have not been made.

The discussion of the works above provide an overview of logistics through history. There are several themes that are evident through all of these works:

1) Logistics often drives the tactical plan.

2) Changes in the way we fight our armies will require changes in the way we support our armies.

3) The problems in supply that we face today are very similar to the problems faced in the past.

Logistics is ultimately tied to the tactical demands of the battlefield. A review of the historical evolution of the art of logistics impresses on the reader the need to continue to look for alternative ways to support the force, to look at current doctrine with a critical eye to insure that the methods in use are the appropriate and most efficient ones possible. If they are not, then he should not be afraid to try new and different ideas. As Rommel put it:

> The first essential condition for an Army to be able to stand the strain of battle is an adequate stock of weapons, petrol and ammunition. In fact, the battle is fought and decided by the quartermasters before the shooting begins. The bravest men can do nothing without guns, the guns nothing without plenty of ammunition, and neither guns nor ammunition are much use in mobile warfare unless there are vehicles with sufficient petrol to haul them around.[11]

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[11]Van Creveld, 200.

On today's highly lethal, material intensive, enlarged battlefield, the army that can "generate...combat power at the decisive time and place"[22] better than the opposing army will most likely be the victor.

DOCTRINAL LITERATURE REVIEW

In order to review army doctrine, an understanding of how the Army develops and disseminates new doctrine is necessary to the foundation of the research. An excellent source on this subject is TRADOC Pamphlet 310-6, Armywide Doctrinal and Training Literature (ADTL) Development and Preparation.[23]

Field Manual 100-1, The Army, outlines the mission and fundamental role that the Army plays in securing U.S. national policy objectives.[24] FM 100-1 is required reading in order to understand Army doctrine as it is outlined in Field Manual 100-5, Operations.[25]

Field Manual 100-5, Operations, is the Army's "keystone warfighting manual"[26] in which Airland Battle

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[22]FM 100-5, 60.

[23]Training and Doctrine Command Pamphlet 310-6, Armywide Doctrinal and Training Literature (ADTL) Development Program, (Fort Monroe, Va.; 1985).

[24]U.S. Army, FM 100-1, The Army, (Washington: Department of the Army; 1986), iii.

[25]FM 100-5, 191.

[26]Ibid., i.

doctrine is defined. This manual provides the general doctrinal guidelines of how the Army will fight its future low, mid, and high intensity conflicts. A thorough understanding of FM 100-5 is a must before a study concerning Airland Battle doctrine can be undertaken. It defines not only the basic tenets of Airland Battle doctrine, it further defines the sustainment imperatives and the key sustainment functions which are key to this study.[27]

Field Manual 100-10, Combat Service Support, is the foundation document for the Army's doctrine on Combat Service Support organizations and functions and how they provide that support to maneuver and combat support forces. Although FM 100-10 prescribes doctrine for all CSS organizations, it focuses primarily on the heavy division organization and its CSS structure. It is also a link between Field Manual 100-5, Operations, and the 71-series and 63-series field manuals which list the details of CSS doctrine for all divisions.[28] This link is made by further defining the sustainment imperatives and functions outlined in Field Manual 100-5 and showing how they relate to the detailed doctrine outlined in the lower series of manuals. It is divided into three general sections: part one - principles for Combat Service Support, part two - describes the important sustainment function of

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[27]Ibid., i-iii.

[28]U.S. Army, FM 100-10, Combat Service Support, (Washington: Department of the Army; 1988), iv-v.

manning the force, part three - continues the description of the other sustainment functions.[29]

In context with Field Manual 100-5, FM 100-10 describes to the reader how the Army will operate and supply its forces during times of conflict. Chapter one explains the mission of the Army and the CSS system and how these two fit together. It explains the sustainment imperatives and describes in some detail the sustainment system from company up to theater level without getting into too much detail. Chapters three through nine go into great detail explaining the sustainment functions and how they relate to airland battle doctrine.[30]

Field Manual 100-15, Corps Operations, prescribes the conduct of corps combat operations and the integration and coordination of combat, combat support, and combat service support organizations. This manual is totally consistent and compatible with Field Manual 100-5 and discusses the concepts and principles which are unique to the employment of a corps without going into the specifics of tactics, techniques, or procedures.[31]

Chapter one defines what an Army Corps is, its historical origins, and how its mission fits into airland

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[29]Ibid., 1-1,3-1,6-1.

[30]Ibid., i-iii.

[31]U.S. Army, FM 100-15, Corps Operations, (Washington: Department of the Army; 1989), i.

battle doctrine. This chapter also discusses the corps as a part of a larger force, corps contingency operations, and how the corps fits into joint operations with the other services. Chapter two discusses the organization of the corps and the units that are normally associated with the corps. Chapter three outlines the command and control of the corps. The remainder of the manual discusses the various corps level operations and how to properly employ a corps in accordance with airland battle doctrine.[32]

Field Manual 1-100, Army Aviation In Combat Operations, embodies the tenets of airland battle doctrine for the employment of aviation in modern warfare.[33] It serves as the doctrinal foundation manual for aviation maneuver echelon manuals and establishes the principles of employment in terms of aviation's major components, functions, and operations. Chapter one provides the link between FM 100-5 airland battle doctrine and provides a doctrinal focus for aviation operations. Chapter two provides an historical perspective of aviation and describes the command and control, operational roles and battlefield functions of army aviation. Chapter three discusses army aviation operations to include sustainment operations. The sustainment portion of this chapter provides a broad, doctrinal overview of how the

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[32]Ibid., i-iii.

[33]U.S. Army, FM 1-100, Army Aviation In Combat Operations, (Washington: Department of the Army; 1989), v.

aviation community provides combat service support to its aviation units.[34]

Field Manual 1-111, Aviation Brigade, provides an overview of how the aviation brigade is organized and how it will fight on the modern battlefield. It focuses on the aviation brigade in the heavy division but also discusses other types of aviation brigades in its appendixes. This manual is an excellent source for delineating the doctrinal employment and organization of the aviation brigade, especially for those who are not too familiar with it. Chapter one deals with the brigade organization and structure and what the role of the brigade will be on the modern battlefield. It also discusses the mission and employment in context with airland battle doctrine. Chapter two discusses the command and control structure and organization. Chapters three and four examine the employment of the aviation brigade in offensive and defensive operations. Chapter five addresses the combat support elements as combat multipliers. Chapter six explains the combat support structure and organization within the aviation brigade.

The how-to support series of manuals provides the logistic operators the specific guidance of to how to provide the logistic support. These manuals are the link between the actual units and the doctrinal manuals such as FM 100-10 and FM 1-100.

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[34]Ibid., 3-23--3-27.

SUPPORT METHODS AND PROCEDURES

Field manuals in the "63" series of the how-to support manuals represent the support concepts that are based on the sustainment doctrine that is presented in Field Manuals 100-5, 100-10 and 1-100.[35]

Field Manual 63-3J, Combat Service Support Operations-Corps, describes how the Army corps employs combat service support to sustain combat units and weapons systems.[36] It is provides doctrine to commanders, staff, and managers of combat service support activities at the corps level.[37] This manual consists of four sections. The first section deals with combat service support planning and operations and provides an overview of the threat that will be present on the modern battlefield. Part two discusses the logistics operations within the corps. It concentrates on the movement and support of the forces. Part three deals with personnel service support and part four describes the support of a corps contingency force.[38]

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[35]Carl, 37.

[36]U.S. Army, FM 63-3J, Combat Service Support Operations-Corps, (Washington: Department of the Army; 1985), iii.

[37]Ibid., iii.

[38]Ibid,. ii.

FM 63-3J provided a good insight on the distribution and control of class III bulk fuels and class V ammunition. Appendix G was very useful in providing corps support unit mission capabilities and employment methods.

Field Manual 63-2-2, Combat Service Support Operations Armored, Mechanized, and Motorized Divisions, describes the support provided by division organizational resources and the support obtained from resources outside the division. Appendix H discusses a high technology division and the concept of supporting that division. Within this structure, the CBAA support battalion is described. This battalion is very similar to the proposed DASB and provides valuable insight as to the proposed use and employment of this battalion.[39]

Field Manual 63-21, Main Support Battalion, describes the operations, overall functions and capabilities, and role of the MSB in providing support to the division. The MSB replaced the supply and transport, maintenance, and medical battalions.[40] The MSB provides overall support to the division on an area basis. This manual discusses the various units within the battalion that the aviation brigade deals with in order to obtain the support needed.

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[39]U.S. Army, FM 63-2-2, Combat service Support Operations Armored, Mechanized, and Motorized Divisions, (Washington: Department of the Army; 1985), I-8--I-10.

[40]U.S. Army, FM 63-21, Main Support Battalion, (Washington: Department of the Army; 1985), ii.

Field Manual 63-20, Forward Support Battalion, outlines the doctrinal support functions of the this divisional support organization. The FSB replaced the forward area support coordinating officers and the forward area support teams.[41] The FSB provides direct support to the maneuver brigades. This manual covers the FSB functions and operations in the heavy divisions. This manual is a backdrop on the type of support the various maneuver brigades received in order to compare it to the support provided to the aviation brigade under the current area support concept and the DASB concept.

RESEARCH AND DEVELOPMENT (R&D)

The combined Arms Research Library (CARL) was a primary source of literature dealing with Research and Development (R&D). Several studies dealing with various aspects of support for the DASB were provided. One of these studies deals with the Independent Evaluation Report that was done on the DASB by the TRADOC Independent Evaluation Directorate (TIED) in 1988. This report deals with the DASB as a concept and looks at it from a cost analysis perspective. The criteria that it bases its evaluation on are rather general and are very subjective, depending on the information provided and the source of that information.

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[41] U.S. Army Field Manual 63-20, Forward Support Battalion, (Washington, D.C.; 1985), ii.

Another excellent source of information was the U.S. Army Aviation Logistics School. This source provided several studies that dealt with the concept of the DASB. The Logistics School also provided a report from Fort Lewis where the DASB had been tested. The information helped greatly in the analysis of the DASB's capabilities and limitations.

Overall, the research and development literature was somewhat limited. This was primarily due to the fact that it is a relatively new concept and has yet to be fully implemented. Although the DASB is currently being tested in Germany at this time, the studies produced by that test will not be available for inclusion in this study.

CHAPTER 3

DOCTRINE

INTRODUCTION

The mission of the combat service support system is to maximize and sustain combat power so that it can be employed at the decisive place and time on the battlefield.[1] This mission has grown increasingly more difficult as technology and doctrine have developed and evolved on the modern battlefield. High consumption rates for both fuel and ammunition by the various combat vehicles and aircraft have strained the system to its limits. Additionally, the advanced technology and sensitivity of weapon systems, optics, laser designators, and other advanced weaponry have increased the demand for repair parts and maintenance.

In addition to technology advances, our doctrine has evolved into one that requires an army that is highly mobile, can operate on a continuous basis, and will be able to respond to any threat world wide with an appropriate force over great distances. This increased operational tempo has also increased the demands on the logistics system. Not only must the CSS units support their combat and combat support units,

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[1]U.S. Army, FM 100-10, Combat Service Support, (Washington: Department of the Army; 1988), 1-2.

but they must do it over greater distances on the battlefield, day or night, and in all types of weather and terrain.

The problems of keeping up with technology and doctrine have been brought to the forefront by the Aviation Brigade. No other unit in the division structure has as diverse an organization than the Aviation Brigade. It has ground fighting vehicles, attack, general support and assault helicopters, and a variety of support vehicles and equipment.

This chapter will briefly discuss the organization of the Aviation Brigade and how it is doctrinally employed on the modern battlefield. It will then review how the current logistical support system performs the three sustainment functions outlined in FM 100-5: Arming, Fueling, and Fixing.[2]

AVIATION BRIGADE

Each heavy division in the army is assigned one Aviation Brigade. The Aviation Brigade is an extremely flexible and highly versatile organization with several units that can perform a wide variety of missions. Within this brigade is a headquarters and headquarters company (HHC), a cavalry squadron, one or two attack battalions[3], a combat

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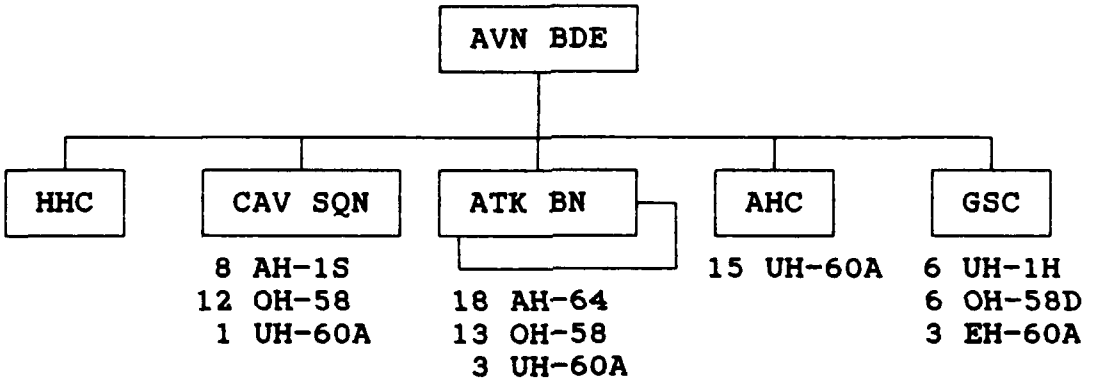
[2]U.S. Army FM 100-5, Operations, (Washington: Department of the Army; 1986), 60-62.

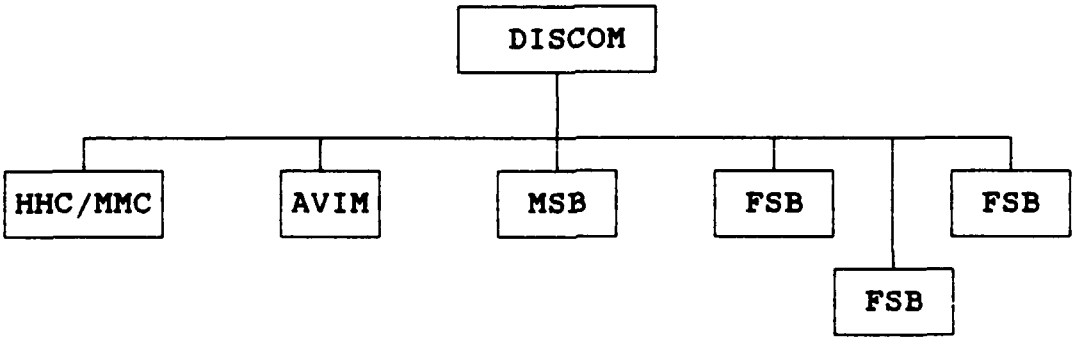
[3]U.S. Army, FM 1-111, Aviation Brigade. (Washington: Department of the Army; 1986), 1-1. Aviation Brigades stationed overseas are assigned two attack battalions while units based in the United States are assigned one attack battalion.

assault company and a general support company--see figure 3-1. The Aviation Intermediate Maintenance Company in the DISCOM provides intermediate level maintenance for the division aircraft--see figure 3-2.[4] Although the AVIM company is not organic to the brigade, it has a direct support relationship to the brigade, much like the FSBs within the division have to the their maneuver brigades.



ARMY OF EXCELLENCE AVIATION BRIGADE

Figure 3-1



ARMY OF EXCELLENCE DISCOM WITH AVIM

Figure 3-2

[4]FM 1-111, 1-3.

The headquarters and headquarters company consists of the company headquarters, a command section, the primary brigade staff sections and a communications platoon. There are no organic aircraft in this unit. Therefore, it must receive its aviation support from somewhere else in the brigade. That support traditionally comes from the assault helicopter company.

The HHC is the command center for the brigade. The brigade staff coordinates the actions of the brigade elements with adjacent, higher and lower headquarters. It provides command and control for the brigade, Army airspace command and control, and communications between the brigade units and the division headquarters. It is usually located where it can most effectively proved command and control, and support to the brigade.[5]

The cavalry squadron is the eyes and ears of the division. Its primary mission is reconnaissance, but it can also conduct screening operations and enhance command and control for the division. It consists of one headquarters and headquarters company, two air cavalry troops, and two ground troops. It has the usual organic level maintenance capabilities that other combat battalion level units have in the division with the addition of an Aviation Unit Maintenance (AVUM) platoon. This platoon provides operator

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[5]Ibid., 1-2. This information is summarized from this FM and from my experience working with the 1st Infantry Division (MECH) at Fort Riley.

and unit level maintenance for the airframes assigned to the squadron.[6]

The squadron has a variety of weapons systems and equipment. The air cavalry troops each have four (4) AH-1S cobra attack helicopters and six (6) OH-58 scout helicopters. The cobras can fire several different types of munitions to include the Tube-launched, Optically tracked, Wire-guided (TOW) missile, 20-mm Cannon, and 2.75 inch Folding Fin Aerial Rockets (FFAR). The major weapon systems for each ground troop are the M3 Cavalry Fighting Vehicles (CFV) and the 107-mm Mortars. There are nineteen (19) M3's and three (3) 107-mm mortars per cavalry troop. The primary armament for the M3 is the 25-mm Cannon. But it can also fire the TOW missile. In addition to these systems, the squadron HHC has a UH-60 Blackhawk helicopter for command and control and two CFV's. This makes a total of eight (8) AH-1S cobras, twelve (12) OH-58's, one (1) UH-60, forty (40) M3 CFV's and six (6) 107-mm mortars within the divisional cavalry squadron.[7]

The employment of the cavalry squadron can vary depending on the desires of the division commander. It is assigned as an organic element of the aviation brigade and can be left under the command and control of that headquarters. It can also be assigned directly under the command and control

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[6]Ibid., 1-2--1-3.

[7]U.S. Army Command and General Staff College Student Text 100-3 G-3 Battle Book, (Fort leavenworth, Kansas; 1989), 3-9 and 3-2.

of the division or to the headquarters of another maneuver brigade. It is also supplemented with additional combat and combat support units as needed in order to enhance its staying power to perform economy of force, guard, and cover missions. The overall flexibility of the cavalry squadron is enhanced when employing both air and ground troops together to take advantage of each unit's strengths while minimizing their weaknesses. However, the air troops are very similar in structure to the Army of Excellence force structures and must rely on the squadron headquarters not only for its logistical support but also for its operational planning.[8]

As discussed earlier, the division will have either one or two attack helicopter battalions. For the purposes of this paper, the heavy division will have two attack battalions equipped with AH-64 Apache helicopters. This is because the overseas divisions already have two battalions and, although the CONUS based units only have one attack battalion assigned on active duty, the divisions have a roundout attack battalion in the national guard or reserve. Therefore, in case of mobilization and deployment of the CONUS based division, it would still deploy with two full attack battalions.[9]

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[8]FM 1-111. 1-3. For a more detailed discussion on how the Cavalry Squadron conducts operations, see Field Manuals 1-114, 1-116, and 17-95.

[9]This information is based on my experience with the 1st Infantry Division at Ft. Riley, Kansas, which had a habitual relationship with a reserve attack battalion based in Colorado. I do not know it that battalion was deployed to Saudi Arabia with the 1st ID, but I do know that it is on

The attack battalion organization consists of a Headquarters and Service company (HSC) and three attack companies. The HSC provides command and control and logistical support for the battalion. It consists of the battalion commander and his staff, an AVUM platoon that provides unit level maintenance support for the attack companies,[10] a class III/V platoon that provides bulk and packaged petroleum, oils, and lubricants (POL) for the battalion, and a medical section. In addition to these assets, the HSC also has organic to it one OH-58 scout and three UH-60 utility helicopters to assist in command and control and resupply operations. Each company consists of four OH-58 scout helicopters and six (6) AH-64 attack helicopters. Thus, the battalion has eighteen (18) Apache attack helicopters, thirteen (13) OH-58 scout helicopters, and three (3) UH-60 Blackhawk utility helicopters.[11]

The attack helicopter battalion is an extremely flexible unit that can respond to the enemy threat anywhere in the division area on short notice. Its primary mission is to destroy massed enemy armor units with aerial firepower, mobility and shock effect. But it can conduct a variety of

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standby for such contingencies.

[10]The AVUM platoon is in the process of being converted into an AVUM company. However, since my departure from Fort Riley, the organization at the 1st Infantry Division was still provisional.

[11]U.S. Army, FM 1-112 Attack Helicopter Battalion, (Washington: Department of the Army; 1986), 1-1--1-2.

missions to include Joint Air Attack Team (JAAT), request and adjust indirect fires and close air support (CAS), conduct rear area operations, suppress or destroy enemy ADA assets, and reinforce, by fire, ground maneuver forces.[12]

The attack battalion is employed as a massed unit, or by individual companies, depending on the situation. It can also conduct continuous operations on a 24 hour basis. Finally, the battalion can be under the operational control (OPCON) of another attack battalion, a major ground maneuver unit, or directly under the division commander.[13]

The Assault Helicopter Company (AHC) conducts air operations in support of the division. These include aerial resupply, air movement of troops and equipment, and air assault operations. Its organization consists of a company headquarters, a flight operations platoon, an AVUM platoon, and three assault helicopter platoons with five UH-60 Blackhawk utility helicopters per platoon. In the heavy division the employment of the assault company is usually restricted to resupply operations and command and control. However, there are occasions when it will be utilized to insert the division's Long Range Reconnaissance Detachments (LRSD) deep behind enemy lines or to conduct limited air assault operations. Although this company has most of its own

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[12]Ibid., 1-1.

[13]For a more detailed explanation on the employment of the attack battalion, see FM 1-112.

support capabilities to include a supply section, POL section, and an AVUM platoon, it still relies on the Brigade headquarters for planning and general support. The AHC also relies on the AVIM company for organic avionics, aircraft, and aircraft armament maintenance support.[14]

The General Support Company (GSC) is the final unit under the aviation brigade organization. It consists of a company headquarters, a flight operations platoon, a command, control and communications (C^3) platoon with six (6) UH-1H utility helicopters, a division artillery (DIVARTY) platoon with six (6) OH-58D helicopters, a Combat Electronic Warfare Intelligence (CEWI) platoon with three (3) EH-60A Blackhawk helicopters, and an AVUM platoon. It provides the division with aircraft for command and control (C^2) and liaison, combat electronic warfare intelligence, and field artillery air observer missions. It normally operates in the division rear area and receives its planning and support, both general and aircraft, from the same sources as the AHC.[15]

The Aviation Brigade, as an organization, contains a wide variety of vehicles and equipment. Including the cavalry squadron, it has 285 vehicles of all types to include combat vehicles, refuelers, cargo carriers and troop transports, to

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[14]FM 1-111, 1-5. For more detailed information on the Assault Helicopter Company, its organization and employment, and air assault operations, see FMs 1-113 and 90-4.

[15]Ibid., 1-6.

name a few.[16] Within the brigade there are seven different types of helicopters for a total of 85 airframes. It also has the usual ground support equipment associated with both aircraft and vehicles to include generators, test equipment and support vehicles. It is obvious from the above discussion that the aviation brigade is indeed an extremely flexible and capable unit from a tactical point of view.

As the capabilities of army aviation increased, doctrine also changed. Until recently, army aviation had been utilized in a support role. Even with the emergence of the helicopter during the Vietnam war, it was still utilized in a support role to transport troops, supplies and equipment around the battlefield and for medical evacuation.

In order to provide adequate support to the aviation brigade in this traditional role, the current combat service support system was developed. It differs from the support that is available the other maneuver brigades. This is primarily due to the fact that, until recently, aviation was perceived as a combat support asset, not as a maneuver unit. This issue causes a great deal of the controversy with the support system and will be taken up later. The remainder of this chapter is devoted to explaining the current CSS system as it relates to arming, fueling, and fixing and how it provides support for the aviation brigade.

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[16]U.S. Army Command and General Staff College, Student Text 100-6 G-4 Battle Book, (Fort Leavenworth, Kansas; 1990), 2-6.

ARMING

Arming is ensuring that the right ammunition is at the right place and time in the correct quantities. This is an especially demanding task for the aviation brigade when considering the many different types of weapon systems within the brigade and the different types of munitions that these weapons can employ.

The system that is in place now provides support on an area support basis from the division and corps units to the aviation brigade.[17] Normally, there is one ammunition transfer point (ATP) in each of the brigade support areas operated by the supply companies of the forward support battalions. There is an additional ATP in the division support area (DSA) run by the supply and service (S&S) company in the main support battalion (MSB). Each ATP will provide selected high-tonnage/high-usage ammunition in support of any unit recommended by the Division Ammunition Officer (DAO) and the Division Operations Officer (G3) and approved by the Division Commander.[18] Normally, one ATP is in direct support of each of the ground maneuver brigades. A corps ammunition supply point (ASP) or a corps storage area (CSA) provides

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[17]FM 100-10, Combat Service Support, 1-14. Area support is based on geographic location. Since the majority of the Aviation Brigade's assets are located in the division rear, the MSB will provide support to it based on its location.

[18]U.S. Army, FM 63-2-2, Combat Service Operations Armored, Mechanized, and Motorized Divisions, (Washington: Department of the Army; 1985), 5-12.

supplies to these ATPs. Corps ammunition units establish these ASPs as far forward as possible, usually directly behind the division rear boundary. The Corps uses its own transportation assets to move the ammunition forward to the ASPs and ATPs in order to shorten the combat unit resupply time.[19]

Doctrinally, the aviation brigade and its units, especially the cavalry squadron, should be able to receive ammunition from any of the four ATP's operating in the division and brigade areas. If the attack battalion has a company working in the same sector as one of the maneuver brigades, then that company should be able to draw ammunition from the ATP supporting that brigade. However, in order to receive ammunition from that ATP, the aviation brigade must project far enough in advance what its needs will be so that the Class V can be delivered. Doctrinally, that lead time should be anywhere from 6 to 12 hours.[20]

The same is true for the cavalry squadron. Normally the cavalry will be conducting reconnaissance operations under division control. The squadron would have to coordinate through the aviation brigade S-4, or directly with the brigade it was operating closest to, for resupply of ammunition.

Normally, the aviation brigade is not given a sector to defend. It usually sets up in the division rear area and

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[19]Ibid., 2-9.

[20]FM 1-111, 6-12.

conducts operations well behind the forward brigades. The primary reason for this is because the aviation brigade has no ground maneuver forces organic to it other than the cavalry squadron, which is normally placed OPCON under the division commander's control. A secondary reason is that the distances that the aircraft have to cover are relatively short and can be traversed rather quickly. The farther back from the front lines, the more difficult it is to destroy these valuable assets. Therefore, the aviation brigade stays out of medium artillery range as much as possible until it is required to move forward.

Doctrinally, units located in the division rear area, such as the aviation brigade, division engineers, and military police, draw their ammunition from the division ATP or the supporting corps ASP.[21] Since the aviation brigade is commonly employed in the division support area, it would normally draw its ammunition supplies from this ATP. The brigade HHC, AHC, and GSC have no dedicated Class V assets. However, since they have a low consumption rate of primarily small arms ammunition and they are located well to the rear near the division ATP, the drawing of ammunition for these units is a relatively easy matter.[22] The Class III/V platoon

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[21]FM 63-2-2, 5-13.

[22]The largest weapon assigned to these units is a .50 caliber machine gun and an M203 grenade launcher that attaches to the m-16 rifle. This information is from my experiences with the 1st Infantry Division Aviation Brigade at Fort Riley.

leader in the attack battalion and the support platoon leader from the cavalry squadron will be the biggest customers since their units have all of the major weapons systems which have a high tonnage and high use.[23]

This summarizes the ammunition resupply system as it currently exists for the aviation brigade. The key for successful operations, therefore, begins with having an accurate prediction of the ammunition usage requirements for the brigade. But it doesn't stop there. The next step is to be able to predict where on the battlefield the various units will be operating and at what time so that proper coordination can be made with either the maneuver brigade ATP or the division ATP to ensure that the proper quantities and types of ammunition are available at the proper place and time.

This has to be done so that the resupply system is not over loaded. Presently, the ATPs can transfer as much as 350 short tons of ammunition on a 24-hour basis.[24] Initially, this may seem like a lot. But in a mid to high intensity conflict, with the division on the defense, just the attack battalion is expected to require approximately 45 short tons of ammunition on the first day.[25] This is well within the capabilities of the ATP until the requirements for the other units that the ATP is supporting are considered. A heavy

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[23]Ibid., 6-12.

[24]FM 1-111, 6-12.

[25]Student Text 100-6, 2-4.

brigade within a heavy division with two mechanized battalions and one armor battalion would require approximately 235 short tons of ammunition itself. In addition to these units, each committed brigade is normally supported by an artillery battalion that would be supported by that brigade's ATP. A field artillery battalion equipped with 155mm self propelled howitzers requires 375 short tons for the first day.[26] Although the majority of this ammunition would come from the battalion's basic load, the problem of resupply becomes very difficult when the basic loads are used and the units must rely on the supply system for additional ammunition.

The same problems arise with the division ATP operated by the MSB. Although the aviation brigade is the only brigade that the division ATP will be supporting, it also supports all of the division and corps units located in the division rear. This of course includes the division artillery (DIVARTY) which is also a large consumer of high tonnage/high usage ammunition.

However, the CSA/ASP can, in emergency situations, maintains semi-trailers fully loaded with high usage/high tonnage ammunition for direct issue to the division and brigade ATPs. The number of trailers and the types of ammunition on stand-by must be coordinated by the Division

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[26]These figures come from the G4 Battle Book, page 2-4, and although are not exact, they can be relied on to be a fairly good prediction of the requirements that will be foreseen in this type of environment.

Ammunition Officer and the corps CSA/ASP. The system does have flexibility built in as long as the coordination can be made in advance and enough transportation assets are available in the corps to maintain the flow of ammunition forward to the divisions/brigades.

SUSTAINMENT IMPERATIVES

ANTICIPATION

Because the aviation brigade has to coordinate with several different agencies for its ammunition, anticipating the needs for its units becomes increasingly difficult. This is one of the major drawbacks to the current system. In order to get the required support from a supporting FSB in another brigade area, it requires at least three to six hours advance notice for the DISCOM to provide that support.[27] Because the aviation brigade units are capable of shifting from one place on the battlefield to another within a matter of minutes, the prior coordination required is extremely difficult. This becomes even more critical with the attack battalions and cavalry squadron since the ammunition they use is very bulky, heavy, and difficult to transport rapidly around the battlefield.

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[27]FM 1-111, 6-3.

INTEGRATION

The current system has integrated its available Class V assets well. The attack battalions and the cavalry squadron have their own Class V platoons and organic transportation assets. Since these units are the only consumers of high tonnage, bulky ammunition, they need to have these assets readily available to respond to their needs.

CONTINUITY

Continuity of support under this system relies heavily on the ability of the brigade S-4 to handle multiple tasks and the abilities of the individual battalions to operate on a very decentralized basis. The brigade S-4 has very limited resources with which to accomplish the multitude of tasks that are required. There is not a designated staff member that is responsible for ammunition management on a full time basis. Therefore, the brigade S-4 must rely heavily on the abilities of the attack battalions and cavalry squadron to manage, request and pick up their own ammunition without a lot of brigade involvement. As long as they keep the brigade informed, it is basically up to these units to coordinate their own ammunition with the DAO. This decentralized execution and control can lead to problems if the units do not maintain an accurate record of the ammunition requested, received, and consumed. It can also become a problem with coordination between the various ATP's in the Division if the

attack battalions and the cavalry squadrons require that the ammunition be provided at several locations. Without an honest broker controlling the ammunition requests, there could be a duplication of effort which will waste valuable time and cause shortages in critical types of ammunition such as 2.75 FFAR rockets and TOW missiles.

The continuity of support has critical implications on the modern battlefield. This is especially true because of the greater distances that units must now travel. With the division in the attack moving 100 kilometers a day, it would quickly become unmanageable ror the attack battalions and cavalry squadron to coordinate for ammunition themselves with the various ATP's and ASP's. Another major disadvantage is the high consumption rates. Because of these consumption rates, more ammunition is required. This will increase the burden on the ammunition supply system and make command and control that much more important.

RESPONSIVENESS

The current system can be very responsive to changing requirements. Since the using units own their own resources for pick up of ammunition, they are available to the unit to go directly to whatever location is required. They can go to any ATP in the brigade or division area. They could even go to the Corps rear ASP/CSA if necessary. Also, they are not dependant on any other agency to pick up the ammunition for

them. This decentralized control of assets allows each unit the flexibility to react to the changing conditions on the battlefield with the least amount of hardship.

However, because the aviation brigade operates over the entire battlefield, this is also a weakness. The brigade S-4 will normally allow the various units to conduct their own coordination directly with the ammunition suppliers. The only requirement would be to keep the brigade informed of what ammunition was being requested and drawn in order to keep the paperwork straight. It is very easy to lose control over the various units when they are going to the maneuver brigades ATP, the division ATP, and the CORPS' ATP/ASP/CSAs. This in effect produces four different resupply routes within the brigade which the brigade S-4 must keep track of.

IMPROVISATION

Under this system, the attack battalions and cavalry squadron have the resources available to adapt to rapidly changing situations. For each battalion level unit this is indeed a major strength. However, for the brigade as a whole, it is a weakness. The Brigade has no dedicated Class V assets that it controls that can react to an emergency situation. If it needs to reallocate resources, it must take them from another unit. This could have a severe impact on the losing unit and disrupt operations for that battalion. Therefore,

although there is built into the system for the individual units to improvise, it is an overall weakness for the brigade.

FUELING

The fueling function for the aviation brigade is somewhat different from the arming function. The aviation brigade receives its aviation bulk fuel supplies directly from the Corps Support Command.[28] It receives its other bulk fuels, diesel and mogas, from the MSB. The aviation brigade units have the ability to store up to two days worth of fuel on their organic tankers. This of course is subject to the amount of flying that is conducted by the brigade and the number of refuel vehicles that are fully mission capable.

As the system is set up now, the attack battalion, the assault helicopter company and the general support company have their own fuel vehicles. The AHC has 7 heavy, expandable, mobility trucks (HEMMT), the GSC has 6 HEMMTs, the AHC has 7 HEMMTs, and the attack battalion has 7 HEMMTs. Each HEMMT has a 2500 gallon capacity. This provides a total capacity of 50,000 gallons.[29] Additionally, each unit has three Forward Area Refueling Equipment (FARE) sets. Each of

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[28]FM 1-111, 6-11.

[29]Maj. Walton C Carroll, "U.S. Army Petroleum Supply Capability Is Insufficient To Meet The Demands Of Army Aviation On The Modern Battlefield." MMAS Thesis, (Fort Leavenworth, Kansas), 94.

these sets comes with three 500 gallon fuel blivets, increasing the fuel capacity by 4500 gallons for each unit.[30]

The cavalry squadron has not received the HEMMT trucks yet and is still using the Tank and Pump Units (TPU) which have a capacity of only 1200 gallons. The squadron has 9 TPUs which it must use to support both the ground and air units. It also has two FARE systems with 6 fuel blivets.[31] The total capacity of the cavalry squadron is 13,800 gallons.[32]

The refueling operations are normally conducted as follows. The attack battalions maintain control over their own assets and conduct Forward Area Refueling and Rearming Point (FARRP) operations. This is accomplished by setting up a FARRP in the rear to refuel and rearm the aircraft that remain with the battalion. A second FARRP is established in a forward area, probably in one of the maneuver brigade area or in the cavalry squadron support area. The attack battalion can establish three FARRPs.[33] Once these FARRPs are established, the forward deployed aircraft refuel at the

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[30]Although the FARE systems are TOE equipment, the number of blivets varies depending on the amount of money available to the unit. Most units have an average of 9 blivets. This is based on my experience at Fort Campbell, Korea and Fort Riley.

[31]U.S. Army, FM 1-104, Forward Arming and Refueling Points (Washington: Department of the Army; 1985), 3.

[32]Carl, 94.

[33]FM 1-112, 7-4. An average FARRP will normally consist of a HEMMT cargo truck with trailer and two HEMMT tankers with trailers. The FARRPS will rotate so that at least two FARRPS will be operational at all times.

forward FARRPs. The cavalry squadron, since its assets are very limited, will also take advantage of the opportunity to refuel at these FARRPs provided that the proper coordination has been performed. The FARRPs are sustained by rotating full trucks from the rear forward and bringing the empty trucks back to the rear area to a designated location to top off from the corps support unit.

The AHC and the GSC can combine their assets so that they are able to establish up to two Forward Area Refueling Points (FARP). One will normally be established in the aviation brigade rear area. The other will be on call for the brigade, to set up where and when the need arises.[34] Normally the brigade S-4 will coordinate with the corps support unit that is providing the aviation brigade with its Class III supplies for a time and place for all units within the brigade to top off their empty tankers. The brigade S-4 must also coordinate with the MSB for other fuels, such as mogas and diesel, and for packaged Class III products such as oils, lubricants and fluids. This will be a separate arrangement set apart from the bulk JP-4 resupply.

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[34]FMs 1-111 and 1-104 do not discuss how the AHC and GSC FARPs should be employed. However, this arrangement is based on normal operations conducted by the aviation brigade at Fort Riley during my three years with the brigade.

ANTICIPATION

The refuel operations under the current system are decentralized in both command/control and execution. Each unit must submit its request to the brigade S-4, who then consolidates the requests and coordinates for fuel pick up. As the battle unfolds, the fuel is depleted within the basic loads of the aviation units. The brigade S-4 must keep up with the amount of fuel used during these operations and also anticipate what fuel will be required for future operations. A shortcoming in the system is that the only fuel available is what is already on hand within the units. There is little margin for error. This can be a major factor with today's modern weapons, their high consumption rates of fuel, and the great distances that these units must travel in a very short amount of time.

For example, the attack battalion can store up to 20,000 gallons of aviation fuel.[35] An AH-64 Apache consumes approximately 140 gallons per hour and an OH-58 consumes approximately 40 gallons per hour.[36] If we assume that five

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[35]Maj. Walton C. Carroll, "U.S. Army Petroleum Supply Capability Is Insufficient To Meet The Demands Of Army Aviation On The Modern Battlefield", MMAS Thesis, (Fort Leavenworth, Kansas; 1988), 94. Although the table shows 22,000 gallons capacity, the trailer tank units are no longer authorized for use.

[36]Department of the Army, Student Text 101-6, G-4 Battle Book, (Fort Leavenworth, Kansas; 1990), 2-14.

out of six Apaches and three out of four OH-58s are fully mission capable in each company, there would be available fifteen Apaches and nine OH-58s for operations. According to FM 1-112, a mission for an attack battalion can be expected to last approximately five hours.[37] Under this mission profile, thee consumption rate would be approximately 12,300 gallons per day.[38] This only allows for approximately two days worth of fuel until the battalion will require resupply. If the battle continues at this pace, and the experiences during Desert Storm indicate that it will, the brigade S-4 will have a difficult time keeping up with not only the attack battalions, but also the cavalry squadron, the assault helicopter company and the general support company.

INTEGRATION

The aviation brigade structure provides the maximum possible integration of resources. Each unit has its own refuel assets. Thus, no matter what the operation calls for, each unit will be able to support itself within its limited

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[37]U.S. Army, FM 1-112, Attack Helicopter Battalion (Washington: Department of the Army; 1986) 7-2.

[38]Each AH-64 consumes 140 gals/hr. Multiply this by 15 mission capable aircraft results in 2100 gals/hr. Multiply this by 5 hours results in 10,500 gals. for the mission. The same process applies to the OH-58s, i.e. 9 aircraft X 40 gals/hr X 5 hours results in 1800 gals. for the mission. Total fuel used is 12,300 gals. This figure does not include the UH-60s that could increase the fuel consumption.

capabilities. This will provide the brigade commander the greatest possible freedom of action.

CONTINUITY

The brigade system can operate on a twenty-four hour basis. It can also conduct split operations. It provides fuel at forward deployed FARRPs for aviation assets that are conducting operations in the main battle area and it can support its assets in the rear with additional assets. The ability of the aviation brigade to provide continuous support under the current structure is a major strength. However, the limited resources that are available to carry the high quantities of bulk fuel required to sustain major operations over large distances for several days is a major weakness.

RESPONSIVENESS

Under the current system, the brigade S-4 must coordinate for the corps petroleum supply company to deliver fuel to a location either in the division rear area or into the brigade rear areas. This could take several hours depending on how far back the corps units are or how far forward the aviation brigade has moved. Additionally, this petroleum supply company will be, at best, in general support to the aviation brigade. This corps petroleum supply company is normally allocated one per division and must support that

entire division.[39] Under this system, the aviation brigade will have to fight for priority with all of the other divisional units. Under conditions where the division is moving at a rapid pace, this could be a major drawback under the current system. The more distance the aviation brigade puts between itself and the corps resupply units, the longer it will take for these units to move forward, deliver the fuel, and return for another delivery.

IMPROVISATION

Under the current system, there are four major units that have control over all of the refuel assets in the aviation brigade: the attack battalion, the cavalry squadron, the AHC and the GSC. Each of these organizations is primarily concerned about providing support for itself. Additionally, the assets that are under the control of the brigade are limited. With the decentralization of limited assets, it is very difficult for the Brigade S-4 to orchestrate any contingency operation that may be required. This is a major weakness under the current system.

FIXING

Fixing is probably the most complicated of the three functions being examined. The aviation brigade has such a wide variety of weapon systems and support requirements that

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[39] Ibid., 4-14.

it takes a great deal of effort to maintain the systems in working order and meet the Department of the Army required readiness rates.

Aviation maintenance has been divided into three levels: unit, intermediate and depot. The attack battalion, AHC, GSC, and cavalry squadron all have aviation unit maintenance (AVUM) platoons to conduct the unit level maintenance. However, the intermediate level of maintenance is performed by the Aviation Intermediate Maintenance (AVIM) Company which is under the
command and control of the DISCOM commander. All aviation related parts come from the AVIM company and the AVIM maintains the authorized stockage list (ASL) for the brigade's aircraft. Each unit has the ability to conduct limited aircraft recovery as long as the aircraft is still airworthy. However, only the AVIM has the capability to evacuate the aircraft if it can not be flown out. Normally, the AVIM company establishes itself in the rear area relatively close the aviation brigade in order to facilitate coordination and maintain responsive maintenance support.[40]

Ground maintenance is handled a little differently. Since the aviation brigade has no FSB to provide direct support, it must rely on the MSB for its direct support maintenance. The heavy and light maintenance companies within

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[40] FM 1-111, 6-17.

the MSB provide this support.[41] Although each unit within the brigade has mechanics assigned to it, they can only perform operator and unit level maintenance. If a unit, such as the cavalry, is operating within the area of another maneuver brigade, that brigade's FSB is required to provide direct support for the that unit, including evacuation. Each unit maintains a limited prescribed load list (PLL) of parts that are required to be kept on hand due to the high usage of that item. However, the MSB maintains the ASL. The DISCOM usually locates the MSB in the DSA. With the aviation brigade located in this area also, it usually is not a problem effecting coordination between the two for maintenance recovery and repair of vehicles. However, the MSB also provides support to all other divisional and corps units located in the DSA.

SUSTAINMENT IMPERATIVES

ANTICIPATION

Anticipating maintenance requirements is a strength for the current system. This is mainly because the individual battalions and separate companies have a PLL available along with maintenance capability. Periodic maintenance services for vehicles can be scheduled, parts ordered, and operations adjusted to accommodate the maintenance requirements. The ASLs should be stocked to provide the required parts for both air and ground equipment and vehicles.

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[41] fm 1-111, 6-15.

INTEGRATION

Under the current system, the organizational assets at the battalion level are organized well. However, a major weakness is the link between the direct support unit and the aviation brigade units. Since the MSB provides ground support to all division units in the DSA and is also the unit that provides direct support to the aviation brigade ground equipment, the aviation brigade is constantly competing for priority with the other divisional units. This can cause serious delays in recovery and repair, especially with the cavalry squadron.

CONTINUITY

The same organization that made integration a weakness also makes continuity a weakness. This is especially true for the cavalry squadron. Since the cavalry squadron can operate out in front of the division, it would normally receive its support from one of the forward brigades FSBs. However, after conducting, for example, a screen mission, and falling back into the DSA for reconstitution, the cavalry would have to compete not only with the other aviation brigade elements, but also the division artillery, engineers, military police, and others. This makes continuous support from the MSB extremely difficult, especially when it must surge to meet requirements, such as reconstitution of a major force. When the MSB focuses on another unit, the aviation brigade loses its priority and

thus must wait longer for recovery and repair operations of its ground equipment.

RESPONSIVENESS

The same argument is made for the area of responsiveness. From the above discussion, the ability of the MSB to support the aviation brigade depends to a great degree on the workload of the MSB at the time. When the division is in heavy contact, it is likely that the aviation brigade will need just as much support from the MSB as the other maneuver brigades. However, since the aviation brigade does not have a support organization in direct support of it, other than the AVIM company, it will not be able to receive adequate, responsive maintenance support from the division support organizations. The best they will be able to do is to send small contact teams to evaluate and assist in the evacuation of the various items of equipment. The work that could be accomplished by a maintenance unit located in the FSB must be done further to the division rear at the MSB. This will create an increase in evacuation and repair times, which will increase the time that the units must do without that critical piece of equipment.

IMPROVISATION

Improvisation is not a strong point for the current system either. Although there are a lot of maintenance assets located in the battalions and separate companies, they are under the command and control of each of these various units. The brigade S-4 has no assets that can be called upon in case of an emergency without pulling those assets from another unit within the brigade. This reduces his ability to modify the maintenance support plan and organization within the brigade to meet changing requirements. This is very important when the brigade must deploy several hundred kilometers forward during a major operation. The farther the brigade moves, the more distance is created between itself and its only direct support assets.

SUMMARY

This chapter provides a general understanding of the arming, fueling and fixing functions within the heavy divisions as they are currently organized. The support system is organized generally on an area support basis for the aviation brigade. This is because the aviation brigade is habitually located in the division support area were area support is normally called for. The MSB provides that support or assists in coordinating for the support that it cannot provide.

When the system cannot provide enough support within its capabilities, such as a surge requirement for fuel or ammunition, then the DISCOM staff coordinates with the aviation brigade staff for the corps to provide the required supplies directly to the brigade. This not only reduces the work load on the DISCOM units, but it also reduces the time required to receive the supplies.

Care must be taken, though, since the key to a successful operation is going to be prior planning, anticipation and coordination. The aviation brigade has a lot of different units to work with. It must coordinate with the corps CSA/ASP units to provide ammunition directly to the division ATPs or to the maneuver brigade ATPs as necessary. It must also coordinate with the maneuver brigades S-4 officers to ensure that if any aviation units, such as the cavalry, are operating within their sector, then that ATP must provide the required ammunition for that unit.

When dealing with fuel, the brigade S-4 must coordinate with the separate units within the brigade and the corps refueling unit to ensure that the brigade units are provided with the large quantities of fuel that they require, when they require it. Not only does the S-4 need to ensure that the JP-4 is available, he must also make arrangements with the MSB to ensure that other Class III items, such as mogas and diesel, are available to the brigade. Finally, the

brigade units must coordinate, through the brigade S-4, with the AVIM company, the MSB, and possibly an FSB for maintenance support.

This is a quick overview of the structure of the aviation brigade. It includes a brief discussion of the employment doctrine of army aviation as it fits into the Airland Battle doctrine. It also gives a hint to what the army is looking at in the future. Finally, it evaluates the three key sustainment functions of Arming, Fueling, and Fixing in terms of the sustainment imperatives of Anticipation, Integration, Continuity, Responsiveness, and Improvisation.

CHAPTER 4

DIVISION AVIATION SUPPORT BATTALION

INTRODUCTION

The Army was introducing the new Airland Battle doctrine in the early 1980s at about the same time that the new aircraft systems, the AH-64, OH-58D, and UH-60A, were being fielded. As Airland Battle doctrine developed, so did the doctrine for employment of army aviation on the modern battlefield. FM 1-111 and FM 1-100 outline how army aviation is to be integrated into Airland Battle doctrine. The key element of this new integration was the change in the overall concept of employment. Because these new aircraft could move rapidly across the width and depth of the battlefield with an increased lethality against armored formations, aviation employment doctrine began to shift. The doctrine for employment of the aviation brigade in the rear areas as a combat support/combat service support unit changed. The tactical employment of the aviation brigade is now considered to be little different from that of the ground maneuver forces.[1]

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[1]U.S. Army, FM 1-111, Aviation Brigade, (Washington: Department of the Army; 1986), 1-2.

FM 100-5 defines maneuver as "the movement of forces in relation to the enemy to secure or retain positional advantage."[2] With the abilities of the AH-64, army aviation is well suited to conduct such maneuvers as aerial envelopments and flank attacks. The key to success is aviation's ability to move rapidly on the battlefield, day or night, in all types of weather, to avoid the enemy's strength and attack his weaknesses.[3]

With this new doctrine, there are several new possibilities for employing the aviation brigade. One is for the aviation brigade to be task organized with additional ground maneuver forces. Although these forces would have to come from other divisional units, this would effectively provide the division commander with an additional maneuver brigade with which to fight the battle.[4] The division commander could fight the aviation brigade in the offense or defense just as he would any other maneuver brigade.

A second option would be to maintain the aviation brigade in the rear and fight the deep battle against second

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[2]U.S. Army, FM 100-5, Operations. (Washington: Department of the Army; 1986), 12.

[3]U.S. Army, FM 1-100, Doctrinal Principles For Army Aviation In Combat Operations. (Washington: Department of the Army; 1989), 1-2.

[4]This was done successfully at Fort Riley during a Warfighter Exercise in March, 1990. The aviation brigade was provided two additional ground maneuver battalions and retained control of the cavalry squadron. Under this task organization, it was provided a sector to defend and retained the deep attack mission against the second echelon forces.

echelon forces, command and control, artillery and other high priority units. Although the current doctrine already foresaw this requirement, we now have an airframe that is capable of performing this mission with a high degree of success, especially at night.

In considering these new options, the major factor that impacts on the aviation brigade is its ability to sustain operations on this new battlefield. With the fast paced operations predicted on the modern battlefield, it is questionable whether or not the combat support system for the aviation brigade will be able to keep up. This question drove the Aviation Logistics Study Group in 1987 to review the sustainment doctrine for the aviation brigade. This has resulted in the recommendation that the army adopt the Division Aviation Support Battalion (DASB). This chapter will review the recommended organization of the DASB, how it is to be doctrinally employed on the battlefield, and how it will provide support in the three sustainment functions of arming, fueling, and fixing.

DIVISION AVIATION SUPPORT BATTALION

The DASB, as recommended, will be built around the Aviation Intermediate Maintenance (AVIM) company with elements from both the Division Support Command's (DISCOM) Main Support

Battalion (MSB) and the aviation brigade.[5] The intent was to produce a support system similar to that provided to the regular maneuver brigades without incurring any additional costs, or at least as little cost as possible. A tentative DASB organization was created at Ft. Lewis, Washington with the 9th Infantry Division in 1988 to test the concept. The evaluation conducted provided additional information to further develop the requirements for the DASB to meet the needs of the aviation brigade.[6]

The DASB will be under the command and control of the DISCOM commander, just like the FSBs that support the maneuver brigades--see figure 4-1.[7] The organization will consist of a Headquarters and Supply Company (HSC), a Ground Maintenance Company (GMC) and an Aviation Maintenance Company (AMC)--see figure 4-2.[8]

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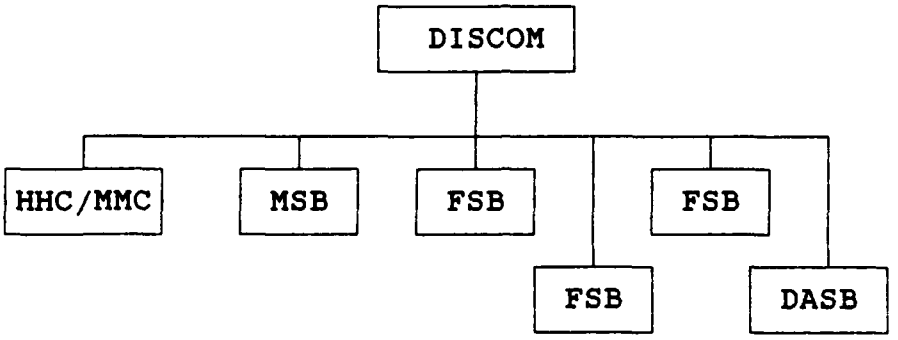
[5]U.S. Army, Aviation Logistics Study--Final Report. Memorandum For Record From Army Aviation Systems Command (St. Louis, Missouri; 1990), 2-3.

[6]LTC Stephen J. Snow, "Aviation Support For The Airland Battle", Army Logistician, (Fort Lee, Virginia; 1990), 29 and U.S. Army, Independent Evaluation Plan For The Aviation Support Battalion, (Fort Leavenworth, Kansas; 1990), 2.

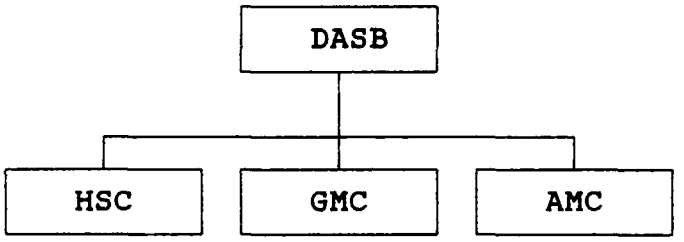
[7]U.S. Army, FM 63-23, Aviation Support Battalion (Preliminary Draft), (Washington: Department of the Army; 1990), 1-4.

[8]Interim Operational Concept-Aviation Support Battalion, Heavy Division, (Fort Eustis, Virginia; 1989), 4-7.



ARMY OF EXCELLENCE DISCOM WITH DASB

Figure 4-1



ORGANIZATION OF THE DASB

Figure 4-2

HEADQUARTERS AND SUPPLY COMPANY

The HSC will consist of the headquarters elements and supply company--see figure 4-3. The headquarters will consist of the command section and the battalion staff.[9] The battalion headquarters will exercise command and control over

[9]James Curtin, "Division Aviation Support Battalion", Aviation Digest. (Fort Rucker, Alabama; 1990), 37.

organic and attached units including security and terrain management. It will also provide planning, directing, and supervising of the support provided by the DASB to the aviation brigade. Finally, it will provide information and advice on the DASB's ability to support the operation to the commander and staff of both the aviation brigade and the DISCOM.[10]

The supply company will have a headquarters element, a class III/V platoon, and a supply section. The company headquarters will maintain command and control over the supply company and will be responsible for the normal operations of that company. The supply section consists of 7 personnel with an E-7 Material and Storage Handling specialist (76V30) as the section chief. The major equipment organic to that section are one 12 Ton semi-tractor and trailer with a 22-1/2 Ton cargo capacity, two 5 Ton drop side cargo trucks, one 4000 pound forklift and two 5 Ton tractor trucks.[11] The supply section provides Class I, II, III (packaged), IV, VII, and unclassified map support. The DASB's HSC maintains one day of supply of Class I and III(P).[12]

The Class III/V platoon is further broken down into the platoon headquarters, the Class III storage/issue section,

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[10] FM 63-23, 6-1.

[11] U.S. Army Draft TOE 63826T200 Heavy Division, Headquarters and Supply Company, Aviation Support Battalion. (Fort Eustis, Virginia; 1990), 9.

[12] FM 63-23, 6-12.

and the Class III/V distribution section. The platoon headquarters consists of a total of 5 personnel including one lieutenant as the platoon leader, an E-7 Fuel Handler Specialist (77F), two E-5 77Fs and one E-4 77F. The storage/issue section consists of 9 personnel to include an E-6 77F section chief, a petroleum supply foreman E-5 77F, and 7 petroleum supply specialists, 3 E-4s and 4 E-3s. Its major equipment consists of one 40,000 gallon fuel system supply point (FSSP) with 350 gallons per minute pump and filter separator, one 20,000 gallon petroleum collapsible fabric tank assembly, and two 10,000 gallon petroleum collapsible fabric tank assemblies. This section is 100% mobile as long as its fuel bags are empty.[13]

The Class III/V distribution section has a total of 19 personnel assigned including an E-6 77F section chief; fifteen Aircraft Fuel handlers, five E-5s, five E-4s and five E-3s; one E-5 ammunition sergeant (55B); and two ammunition specialists, one E-4 and one E-3. The major equipment associated with this section includes four Forward Area Refueling Equipment (FARE) Sets, four 5,000 gallon tankers, six 2,500 gallon Heavy Expandable Mobility Trucks (HEMMT), eighteen 500 gallon collapsible fuel drums, two flat bed trailers (11 Ton HEMAT), two 5 Ton flatbed trailers, four tractor trailers and four 5 Ton cargo trucks.[14]

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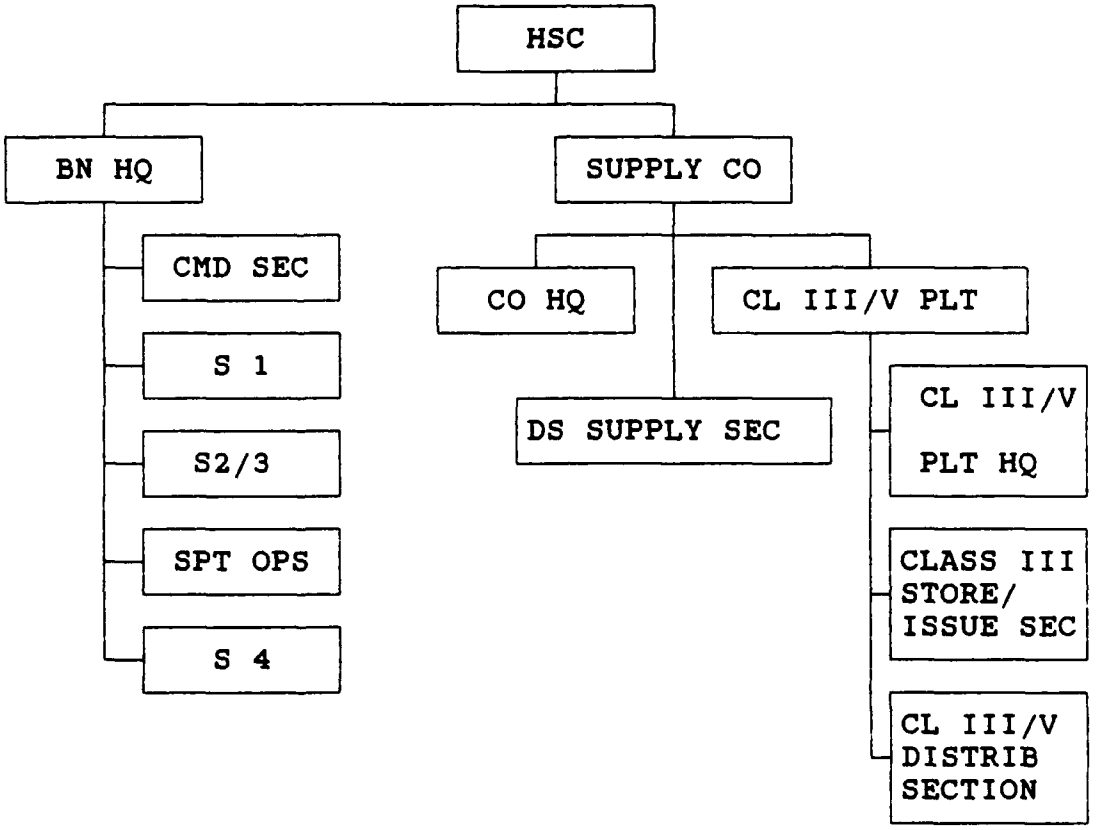
[13]Draft TOE63826T200., 11.

[14]Ibid., 11-12.



ORGANIZATION OF THE HSC

FIGURE 4-3

GROUND MAINTENANCE COMPANY (GMC)

The Ground Maintenance Company performs Direct Support (DS) maintenance for supported elements in the aviation brigade. It also provides consolidated unit maintenance for all DASB units, reinforcing recovery assistance to the aviation brigade, repairable exchange service, and ASL support for both ground and air equipment to support the items stocked in the unit combat Prescribed Load Lists (PLL).[15] It consists of a company headquarters, battalion maintenance platoon, maintenance control platoon, DS maintenance platoon and a supply platoon--see figure 4-4.[16]

The company headquarters provides command and control for the company and consists of the company commander (Captain), a first sergeant, a supply sergeant, an NBC sergeant, a unit armorer, and a combat signaler. The purpose of the headquarters is to provide unit-level administrative, supply and technical maintenance support to the company elements.[17]

The battalion maintenance platoon consist of the platoon headquarters, the battalion maintenance section, the maintenance control section, and the cavalry system support team. The platoon headquarters consists of a unit maintenance

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[15]FM 63-23, 7-1.

[16]FM 63-23, 7-13.

[17]U.S. Army Draft TOE 43819T200 Heavy Division, Ground Maintenance Company, Aviation Support Battalion. (Fort Eustis, Virginia; 1990), 1 and FM 63-23, 7-4.

technician (Warrant Officer), a motor sergeant, The Army Maintenance Management System (TAMMS) clerk, and a PLL clerk. It provides unit-level administrative, supply, and technical maintenance support to elements of the platoon. It also provides command and control for the accomplishment of the platoon's mission.[18]

The battalion maintenance section provides consolidated unit maintenance support for the DASB units. It also provides quality assurance, technical inspections, and quality control for all DS maintenance functions. This section provides the nucleus for the battle damage assessment teams that make on-site determinations on repair and evacuation. It has 34 soldiers assigned with various specialties to repair and maintain the ground equipment associated with the aviation brigade.[19]

The maintenance control section controls, coordinates, and supervises the maintenance shops and the cavalry system support team (CSST). The maintenance control officer dispatches maintenance support teams to provide forward support to aviation brigade units. It consists of seven personnel to include the maintenance control officer (lieutenant) and 6 enlisted personnel.[20]

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[18]FM 63-23, 7-4--7-5 and Draft TOE 43819T200, 3.

[19]Draft TOE 43819T200, 3-4, and FM 63-23, 7-5.

[20]Draft TOE 43819T200, 5 and FM 63-23, 7-5.

The cavalry system support team provides direct support maintenance to the cavalry squadron. It can perform all direct support maintenance required to include engine, powertrain, chassis components of tracked and wheeled vehicles, and turret-mounted weapons and mechanisms maintenance. It consists of twenty one enlisted personnel of various military occupational specialty skills.[21]

The direct support maintenance platoon consists of a platoon headquarters and two sections: automotive repair and ground support equipment. The automotive repair section repairs transmissions, electronic items, and hydraulics for both tracked and wheeled vehicles. It also repairs tank turrets, fire control systems and instruments, and small arms. It has a lieutenant for a platoon leader and an E-7 platoon sergeant. The automotive repair section has seventeen personnel and the ground support equipment section has thirteen.[22]

The supply platoon deals directly with repair parts (Class IX) requirements. It consists of a platoon headquarters, a technical supply operations section, a shipping/receiving section, a storage/issue section, and a repairable exchange (RX) and quick service supply (QSS) section.[23]

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[21]Draft TOE 43819T200, 7 and FM 63-23, 7-5.

[22]Draft TOE 43819T200, 9-12, and FM 63-23, 7-6.

[23]FM 63-23, 7-6.

The technical supply operations section maintains all class IX ground and air items. It maintains both the air and ground ASLs in the same location, but does not intermingle them. The average number of lines for a heavy division has historically been between 4,000 and 5,000.[24] The shipping and receiving section receives and accounts for all incoming supplies. It also redirects supplies when necessary. The storage/issue section stores and monitors supplies, providing security against pilferage and protection against the weather. They are also responsible for selecting the correct material for issue based on release documents. The RX and QSS section provides exchange of selected repairable items and receives, stores, and issues QSS items such as light bulbs, wiper blades, and common bolts.[25] In order to accomplish its mission, the supply platoon has forty two officers and enlisted personnel assigned.[26]

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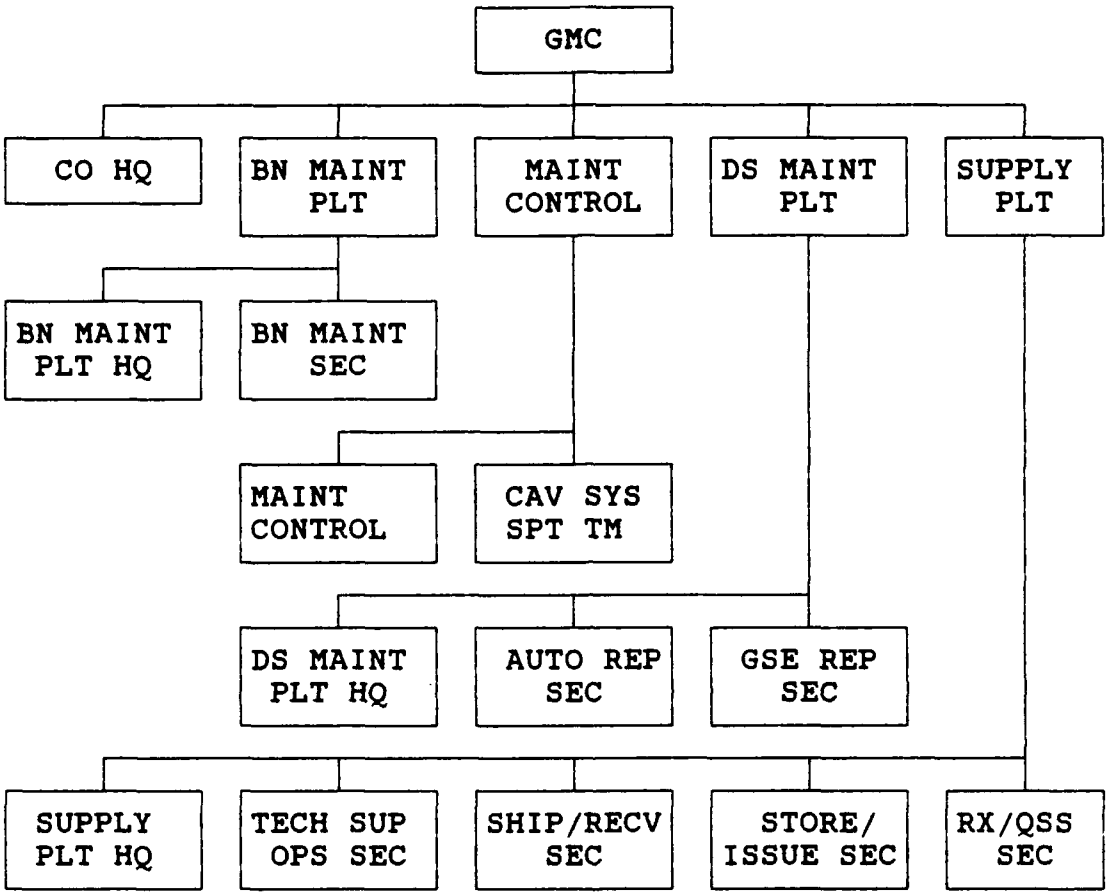
[24]This data is based on a phone conversation on April 19, 1991,with Mr. James Curtin, Directorate of Combat Developments, U.S. Army Aviation Logistics School, Fort Eustis, Va. Although there is no source document that dictates how many lines will be on the ASL, Mr. Curtain conducted an informal survey of several divisions in the army with these results. The planning figure that the logistics school uses for TOEs has traditionally been about 5,800 lines for an ASL. According to Mr. Curtin, HQDA is considering limiting the ASL in the future to 3,000 lines.

[25]FM 63-23, 7-7.

[26]Draft TOE 43819T200, 13-15.



ORGANIZATION OF GROUND MAINTENANCE COMPANY

FIGURE 4-4

AVIATION MAINTENANCE COMPANY (AMC)

The Aviation Maintenance Company is the third and final organization within the DASB. This is the one unit that will remain relatively the same with very few changes to its structure or organization. It will still perform its traditional mission of providing AVIM on airframes, components, armament and avionics; backup recovery and retrograde on repairable equipment; backup aviation unit maintenance support; and forward maintenance contact teams to assist in repair and evacuation of equipment.[27]

The structure of the AVIM company remains relatively constant and can be applied to either the division, Corps, or theater AVIM company with minor changes.[28] The AVIM company includes the company headquarters, production control section, quality control section, helicopter system repair platoon, helicopter subsystem repair platoon, avionics repair section, aircraft armament repair platoon, supply platoon and the service platoon--see figure 4-5.[29]

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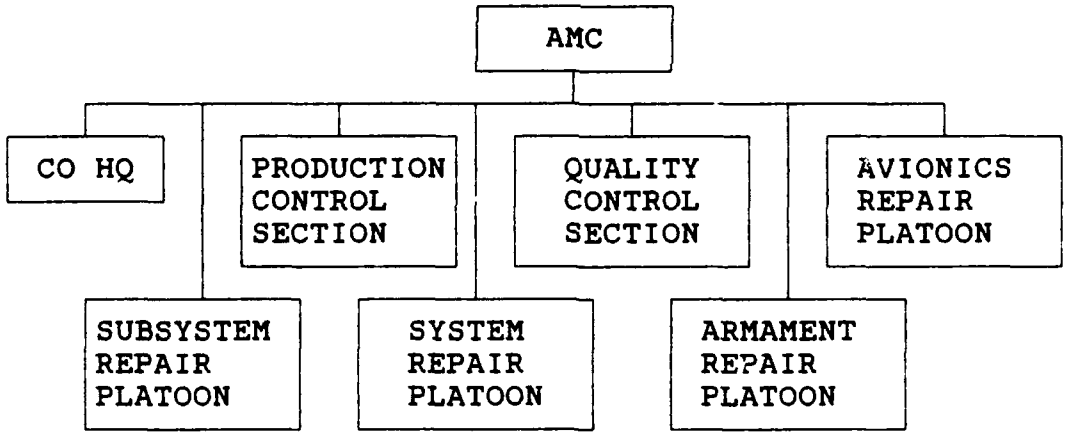
[27]Major M. Wayne Converse, "Division Aviation Support Battalion Update", Army Aviation. (Fort Rucker, Alabama; 1990), 45.

[28]U.S. Army, FM 1-500, Army Aviation Maintenance. (Washington: Department of the Army,; 1989), 2-14.

[29]Ibid., 2-15. For a detailed discussion on the mission, organization, and capabilities of the AVIM company, see FM 1-500.

The changes in the organization and structure of the AVIM company as it applies to the DASB occur in two areas: the supply platoon and the service platoon. The supply platoon, which includes the technical supply operations section, shipping/receiving section, storage/issue section and RX and QSS section, has been moved out of the AVIM and into the GMC. Also, several sections in the service platoon have been moved to the GMC to include the tactical wheeled vehicle maintenance section and the ground support equipment and maintenance section. That leaves only the shop supply and tool crib section and a fuel service/POL storage section remaining.[30]



ORGANIZATION OF THE AVIATION MAINTENANCE COMPANY

FIGURE 4-5

[30]U.S. Army Draft TOE 01937T200 Heavy Division, Aviation Maintenance Company, Aviation Support Battalion. (Fort Eustis, Virginia; 1990), 20-22.

Although the DASB can provide the same responsive support to the aviation brigade as the maneuver brigades receive, it cannot be employed in the same fashion. The biggest limitation is on the ability of the DASB to move quickly on short notice. For example, although the AVIM company no longer has to move the ASL, it still must move a large amount of equipment and vehicles. Normally, it would take the AVIM company at least 12 hours to be ready to move. Therefore, the majority of the assets from the DASB will be positioned in the division rear.[31]

This will not preclude the DASB from sending forward elements from the battalion to provide support at forward locations. The CSST in the GMC will almost always work within the cavalry rear area. Also, the GMC will send forward maintenance support teams, as will the AMC into the brigade area of operations to provide maintenance support, battle damage assessment, and assist in evacuation and recovery operations as necessary.

ARMING

The DASB provides the aviation brigade Class V support through the Class III/V platoon, which is located in the supply company of the HSC. Within the platoon there are three

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[31] The fact about the location of the DASB in the division rear is from FM 63-23, 2-4. The reasons for it are from my own experience in dealing with an AVIM company at Fort Riley and elsewhere.

ammunition specialists commanded by an E-5. They have available to them two HEMMT cargo trucks and two flatbed trailers. There is also a 5 Ton cargo truck available.[32]

The attack battalion and the cavalry squadron still maintain control over their Class V assets. The main function of the Class III/V platoon in the DASB is to provide personnel to augment the FSB or division rear ATPs to meet shifting aviation workload requirements.[33]

Under the DASB concept, the aviation brigade S-4 still submits requests for ammunition by organic and attached units to the Division Ammunition Officer (DAO). The DAO then directs the shipments of ammunition from corps to the supporting ATPs. For the aviation brigade it will either be an FSB ATP or the division rear ATP. However, the Class V section of the Class III/V platoon will be located at the appropriate ATP to provide support to the brigade units that are there to draw ammunition.

The aviation brigade S-4 coordinates with the DASB support operations officer to establish a schedule for issue of the ammunition. After the DAO approves the required paperwcrk, the DASB personnel will assist the drawing unit with transloading the ammunition from the ATP trailers to the brigade vehicles. The DASB personnel will be available to assist, within their capabilities, with the coordination and

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[32]Draft TOE 63825T200, 11-12.

[33]FM 63-23, 6-12.

execution of the ammunition draw. This will become extremely helpful when the attack battalion and the cavalry squadron begin drawing a lot of high tonnage, high use and bulky ammunition.[34]

SUSTAINMENT IMPERATIVES

ANTICIPATION

Under the DASB concept, the major differences in anticipation are the command and control provided by the DASB headquarters staff and where to place the Class III/V platoon. The brigade S-4 conducts the coordination with the DAO. The Class III/V platoon leader coordinates with the various aviation units for the pick up of the ammunition. Since the only real users of high-tonnage/high-bulk ammunition are the attack battalion and the cavalry squadron, the Class III/V platoon leader must anticipate where the greatest need is and make his assets available to meet that need.

The addition of the Class III/V platoon for coordination and management of the brigade's ammunition program greatly increases the aviation brigade's ability to anticipate the needs of the brigade on the battlefield. It will also assist in increasing the effectiveness of the coordination between the attack battalions, cavalry squadron and ammunition units. The DASB will have personnel dedicated

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[34]FM 63-23, 6-20--6-21.

full time to this coordination. This will reduce the duplication of effort by the aviation brigade units and greatly assist in locating the correct ammunition in the right place at the right time.

INTEGRATION

The structure of both systems is basically the same. The only difference is the availability of the Class III/V platoon in the DASB. The attack battalion and the cavalry squadron have retained their Class V assets. Thus, both systems have integrated the arming assets into the organization well. There is a little more flexibility provided under the DASB with the Class III/V platoon available for use by either the attack battalion or the cavalry squadron. Overall, both systems are integrated well and the DASB does not provide an increased advantage over the present system in this area.

CONTINUITY

The DASB provides an added dimension to the aviation brigade that will increase the likelihood of continuous support. The DASB has designated personnel available to coordinate, manage, and monitor the ammunition stocks within the brigade. Additionally, these personnel are available to go directly to the ATP or ASP that is providing support to the aviation brigade to ensure that the brigades needs are met.

This can be done well before the units arrive at the various locations to draw their ammunition. If there are problems with support, the DASB personnel will be available to resolve them without involving the brigade staff. This will allow the brigade staff to concentrate on future operations and requirements.

This added element of support will be extremely effective on a rapidly moving battlefield. Although the brigade units will be moving very rapidly from one location to another, the DASB will be available to effect the coordination needed between the attack battalions, cavalry squadron, and ammunition supply units.

RESPONSIVENESS

The DASB concept also allows for maximum flexibility and responsiveness. It has an edge over the current system's responsiveness because of the increased command and control capability. Within the Class III/V platoon, there are assets available that can effect coordination with the division, corps and brigade units. This single point of contact can handle the coordination for the entire brigade. All of the brigade units, to include the cavalry squadron and the attack battalions, would coordinate with the DASB Class III/V platoon for their support. Under this system, there would only be one resupply route for the brigade that can be easily monitored.

IMPROVISATION

The DASB would provide the aviation brigade an increased ability to improvise. If transportation is a problem, the DASB has vehicles that can be used to increase the overall transportation capability of the brigade. The DASB also relieves the Brigade S-4 from coming up with a solution and taking up his valuable time trying to coordinate an ammunition pickup without adequate communications, transportation, or lift capability. The DASB can take care of all of these requirements and allow the brigade to concentrate on fighting the battle while not getting tied up in ammunition coordination and management problems.

FUELING

During the test conducted with the 9th Infantry Division at Fort Lewis, Washington, all of the refuel assets where placed under the control of the DASB. However, there were several problems that arose from this, command and control and responsiveness to name just a few.[35] The result was to leave the refuel assets in the attack battalion and cavalry squadron and to pool the assets from the AHC and GSC

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[35]U.S. Army, Independent Evaluation Report for the Division Aviation Support Battalion. USATRADOC Independent Evaluation Directorate (Fort Leavenworth, Kansas; 1988), 10-11.

under the Class III/V platoon in the HSC. That recommendation is the way the proposed DASB will function.[36]

Under the DASB concept, the units within the aviation brigade will submit daily usage reports and forecasts for bulk fuel to the brigade S-4. The brigade S-4 will consolidate these requirements and submit them to the DASB support operations section who passes them to the Class III/V platoon.[37] The Class III/V platoon leader submits the daily status report on petroleum to the Division Material Management Center (DMMC), which is the logistics coordinating and control element of the division.[38] The request goes to the Corps Material Management Center (COSCOM MMC), who then coordinates for the delivery of the fuel to the division according to the Class III distribution plan.

The Corps delivers the fuel direct to the DASB. The Class III/V platoon leader coordinates for the deliveries through the support operations officer. Upon delivery, the Corps transfers the fuel from the corps semitrailers into either the DASB's 2,5000 gallon HEMMT tankers or into the Fuel System Supply Point (FSSP). The corps can also drop off full 5,000 gallon tankers and pick up empty ones from the DASB.

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[36]Ibid., 10.

[37]FM 63-23, 6-18.

[38]U.S. Army, FM 63-2-2, Combat Service Support Operations: Armored, Mechanized, and Motorized Divisions. (Washington: Department of the Army; 1985), 4-12.

The DASB then provides fuel to the supported aviation brigade units using supply point distribution.[39]

The Class III/V platoon also has the capability of establishing a FARP in the forward areas. It will establish this FARP either in the aviation brigade's area or in another maneuver brigade's area. It can also establish a FARP in the vicinity of the AHC and GSC to provide rapid refuelling for these assets. Thus, the DASB can provide supply point distribution using the FSSP and other storage bladders while at the same time moving fuel forward to support the forward deployed aviation units such as the attack battalion and the cavalry squadron.[40]

SUSTAINMENT IMPERATIVES

ANTICIPATION

The DASB structure provides added flexibility that will allow the brigade S-4 and the Class III/V platoon leader to anticipate fuel needs better. Upon depletion of the fuel in the basic loads of the attack battalions and cavalry squadron, the Class III/V platoon will conduct refueling operations for those vehicles. After consumption of the fuel in the DASB, the corps petroleum company will be able to go directly to a single source to resupply the brigade. The

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[39]FM 63-23, 6-19--6-20.

[40]Ibid., 6-20.

refuel needs will be consolidated under one headquarters with dedicated personnel which will make managing the refuel requirements much easier.

INTEGRATION

The DASB combines the refuel assets from the AHC and GSC under one headquarters. Although this enhances command and control, it reduces the integration of assets throughout the brigade. The pooling of the assets under the DASB makes the AHC and GSC dependant on the DASB for refuel support. This can have an overall reduction in effectiveness for the brigade, especially upon deployment of the AHC by itself. It can not support itself independently from the brigade as it had before. Therefore, integration of POL assets is a weakness within the DASB.

CONTINUITY

The DASB increases the brigades ability to conduct sustained operations on a continuous basis. It has increased storage capacity under its direct control that can respond to the needs of the entire brigade. With these additional assets, the brigade will be able to operate longer without requiring resupply. With the ability of today's division to move large distances in a matter of days and the twenty four hour capability of Army aviation, this increased storage capability will be beneficial for the aviation brigade.

RESPONSIVENESS

The DASB is very responsive to the needs of the aviation brigade. There are several reasons for this. First, when an aviation unit needs fuel, it can go directly to the DASB. Under the current system, the brigade S-4 must coordinate for the corps petroleum supply company to deliver fuel to a location either in the division rear area or into the brigade rear areas. This could take several hours depending on how far back the corps units are or how far forward the aviation brigade has moved. The fuel is closer and more accessible under the DASB concept. Since the Class III/V platoon can store up to approximately 100,000 gallons on the ground in its fuel storage system bags, the fuel for resupply would only be at the most an hour away from the units.

Secondly, the DASB also has the ability to store an additional 44,000 gallons on moveable platforms and vehicles. This gives the DASB the ability to push fuel forward quickly, which is impossible under the current system.

Finally, under the current system, the aviation brigade gets its fuel from a petroleum supply company at corps who will be, at best, in general support to the aviation brigade. That corps petroleum supply company is normally allocated one per division and must support that entire division.[41] Under this system, the aviation brigade will have

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[41] Ibid., 4-14.

to fight for priority with all of the other divisional units. With the DASB, there is a readily available supply of fuel that will allow it to operate for at least three days under normal operations.

However, the DASB does have one disadvantage that the current system does not. The FSSP system, when full of fuel, is immobile until the bags are emptied. Thus, if the DASB is under orders to move quickly, it would not be able to do so without leaving behind a large part of its storage capability. The current system does not have this problem. The majority of its assets are vehicular mounted and are easy to move. Although this can be a major disadvantage, with proper anticipation of the battlefield requirements, the responsiveness that the DASB provides will out weigh the disadvantages of temporary immobility.

IMPROVISATION

In the area of improvisation, the DASB has two major advantages. First, the command and control of the refuel assets is more centralized. Under the DASB concept, only three organizations have refuel assets: the attack battalion, the cavalry squadron, and the DASB. With centralized control over these assets, it is easier to pool them together, or disperse them in an organized plan to benefit the entire brigade.

Secondly, there are more assets available to the aviation brigade to improvise with. Not only are there the refuel assets from the AHC and GSC, but there are additional assets from the MSB such as the FSSP and the 5,000 gallon tankers. With these additional assets, it is easier to arrive at more bold and innovative solutions to problems than if the resources are limited. These additional resources would not be available under the current concept because they belong to the MSB under DISCOM. Although the MSB provides support to the aviation brigade, there is no way that an MSB commander would give his refuel assets to the aviation brigade without a considerable argument, especially when the MSB has to provide support to the rest of the division.

FIXING

The overriding goal for the DASB is to provide forward support to the aviation brigade in order to return aviation combat systems to the battle as soon as possible.[42] The DASB accomplishes this by supporting forward as much as possible and maintaining centralized command and control while decentralizing execution.

The ground maintenance assets are in the ground maintenance company while the aviation maintenance assets are under the aviation maintenance company. The maintenance effort is even further centralized by the placing of the

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[42]FM 63-23, 7-2 and 8-1.

ground and air ASLs under one authority in the ground maintenance company. Thus all of the maintenance assets are centrally located depending on their orientation: air or ground.

Once the priorities are established and agreed upon by the aviation brigade commander and the DASB commander, the execution of the maintenance plan relies on decentralized execution. The CSST is deployed away from its parent unit forward into the cavalry squadron's support area. MSTs are sent forward by the GMC to provide battle damage assessment and repair. There could be several MSTs deployed depending on the disposition of the aviation brigade and the amount of support required. Each of the MST leaders must be able to operate on his own initiative and judgement in order to ensure that the overall mission for the DASB is accomplished.[43]

This decentralized execution is also characteristic of the AMC. The AMC will send out maintenance contact teams to assist in the repair and evacuation of downed aircraft. There could be anywhere from one to several of these teams forward deployed in the brigade area, to include the cavalry squadron support area.[44] Thus, both the GMC and AMC can have units with small maintenance teams deployed throughout the brigade

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[43]Ibid., 7-9.

[44]Ibid., 8-3--8-4.

and division areas while simultaneously conducting maintenance operations back at their field locations.

In the area of Class IX (repair parts), the technical supply operations section in the GMC supports both the air and ground units. This section maintains both the air and ground ASLs. The DASB supports the aviation brigade by maintaining the ASLs and shop stock for certain repairable exchange items an hand in the GMC. When a unit requires a part that is not on its PLL or bench stock, either ground or air, it goes to the unit from the DASB that is supporting it. It submits the parts request to that unit. If the unit does not have the part on hand, it passes the request to the technical supply operations section. If the part is on hand in the ASL then the Storage and Issue section will issue the part. If it is not, then the technical supply operations section will order the part through the DMMC. Thus, no matter where the part request originates, it will ultimately end up at the technical supply operations section.[45]

The unit is responsible for recovery of its organic vehicles and equipment, if possible. However, if the unit cannot recover the vehicle or aircraft, for what ever reason, the DASB will conduct backup recovery and evacuation operations. If the vehicle or aircraft is recoverable, then the system works the same as for any other FSB. The unit brings the vehicle to a maintenance collection point. The

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[45]Ibid., 7-7.

DASB personnel evaluate the vehicle to determine whether or not it will be repaired on site or evacuated further to the rear.[46]

SUSTAINMENT IMPERATIVES

ANTICIPATION

Anticipating the requirements for maintenance and repair parts is a strong point for the DASB. The ASLs for both air and ground repair parts are consolidated under one headquarters in the DASB instead of being placed under the MSB and the AVIM company under DISCOM. This will allow for a quicker assessment of the status of the repair parts that are available. Also, the DASB will be able to coordinate directly with the brigade to meet the direct support needs of the brigade without having the brigade fight with another divisional unit for priority.

INTEGRATION

The consolidating of the maintenance assets under the DASB favors the integration of the maintenance effort. Initially it appears that the units are losing the ability to receive adequate maintenance support, or to provide support for themselves. But after further scrutiny, the flexibility

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[46]Ibid., 7-9.

of the DASB shows that it is a unit that is even more capable of integrating the maintenance assets than the current system. With the cavalry system support team and the maintenance support teams from the ground maintenance company, and the maintenance contact teams from the aviation maintenance company, the DASB commander can task organize his units to meet the changing requirements on the battlefield. He can shift work priorities as necessary based on the aviation brigade commanders guidance to meet heavy demand in one area when the demands in another are not as great.

CONTINUITY

Since the aviation maintenance structure is basically the same, there is no advantage for the DASB in providing continuous aviation support to the aviation brigade. However, continuous support by the DASB for ground maintenance is a major strong point. The DASB can send out MSTs and the CSST to provide continuous support immediately. There are enough personnel available within the DASB structure to provide this support on a twenty-four hour basis. As the brigade moves about the battlefield, conducting deep operations and moving with the division several hundred kilometers a day, the DASB would be able to provide the continuous support needed throughout the entire operation. Also, since the DASB would be located forward in the brigade support area, the support would be available quicker.

RESPONSIVENESS

Since the organizational maintenance assets for ground maintenance are no longer in the brigade units, it seems that the responsiveness of support would suffer under the DASB concept. This is not the case. Actually, the DASB is a lot more responsive than the current system. This is based on three factors. First, the aviation maintenance company is now under the command and control of a battalion headquarters, reducing the administrative requirements that the AVIM company had to deal with as a separate company under the DISCOM. That battalion is in direct support of the aviation brigade and receives its priorities from the brigade commander. With a battalion headquarters to provide guidance, support and direction for the AMC, it is easier for the AMC to respond to the needs of the aviation brigade.

Secondly, the maintenance support from the MSB will no longer be on a first come first serve basis. The brigade will have a maintenance unit dedicated to supporting it, just like the maneuver brigades have. It will not have to rely on the MSB to provide support to it and it won't have to compete with the rest of the division for priority.

Third, with a battalion headquarters available to provide planning and guidance, the maintenance assets will be able to better anticipate and react to the events on the battlefield. The AVIM commander won't have to worry about supporting himself, when to move, and what priorities to set.

The battalion staff will be able to assist him in that so that he can concentrate on providing dedicated maintenance support to the aviation brigade.

There is one major drawback in this area with regards to aviation repair parts availability. This deals with the size of the aviation ASL. During a discussion with Maj. M. Merle Converse, I discovered that the current plan is to reduce the aviation ASL to a total of 2,000 lines.[47] As a maintenance officer this concerns me for two reasons. First, based on my experience with the AH-1S, UH-1H, and UH-60A helicopters at Fort Riley, there are a lot of parts that are required to maintain these helicopters. The average number of lines for a heavy division has historically been between 4,000 and 5,000.[48] Although there are many parts that can be placed on the bench stock list at unit level and shop stock lists at

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[47]This discussion took place during a visit by Maj. Converse to Ft. Leavenworth, Kansas, on 21 March, 1991 in the Bell Hall Cafeteria. Maj. Converse is the Chief, Organization and Personnel Systems Division, Directorate for Combat Developments, USAALS, Ft. Eustis, Virginia.

[48]This data is based on a phone conversation with Mr. James Curtin, Directorate of Combat Developments, U.S. Army Aviation Logistics School, Fort Eustis, Va. Although there is no source document that dictates how many lines will be on the ASL, Mr. Curtain conducted an informal survey of several divisions in the army with these results. The planning figure that the logistics school uses for TOEs has traditionally been about 5,800 lines for an ASL.

the AVIM, there are still literally thousands of parts that are required just to maintain the UH-60A.[49]

Secondly, in the aviation brigade today there are seven different airframes that the ASL must support: two observation helicopters, two attack helicopters, two utility helicopters and one electronic warfare helicopter. Very few of the parts that are required for one airframe can be used on the other. Even the common hardware for these aircraft is more often different than it is the same. Therefore, just by have so many different airframes to support, the demands on the ASL are going to be tremendous.

Although the ASL will have on hand the majority of the critical parts needed to sustain operations, the need for a larger aviation ASL could reduce the AMC's ability to provide selected items in a timely manner, thereby increasing the amount of time needed to make the repairs. This may or may not be a problem, but it could have an impact on the DASB's ability to respond to the needs of the aviation brigade in a timely manner.

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[49]If an item is placed on bench or shop stock, it doesn't necessarily have to be on the ASL, and often times isn't. Therefore, the ASL can be used to store items that are not common use, are of a higher priority, and often times more difficult to get.

IMPROVISATION

With all of the maintenance assets centrally located under one commander, it will be easier for the DASB to improvise. The DASB would not have to look for assets or try to consolidate and coordinate with, nor would it have to deal with a lot of different units. With all of the assets under his control, the DASB commander will have the staff, assets, and authority to make decisions on how to provide the required support. As it is now, the brigade S-4 would have to organize assets from at least two, and maybe as many as seven, different units to improvise any alternative course of action that required additional assets.

SUMMARY

This chapter has discussed the structure, doctrine, and employment of the DASB as it is currently being proposed. The DASB was created out of hide from the division's MSB, the aviation brigade, and the divisional AVIM company. It attempts to centralize the command and control elements of the logistical system along with some of the assets in order to streamline the CSS process. The DASB was analyzed using the sustainment functions of Arming, Fueling, and Fixing as evaluated by the sustainment imperatives of Anticipation, Integration, Continuity, Responsiveness, and Improvisation. Chapter Five will compare the two systems to determine if one has an advantage over the other.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

Chapter Three discussed the aviation brigade, its structure, how it is presently employed, and how it is currently supported by the logistic support system. Chapter Four presented an analysis of an alternative logistic support system centered around the Division Aviation Support Battalion. Both chapters analyzed the logistical support systems using the sustainment functions of Arming, Fueling, and Fixing as evaluated by the six sustainment imperatives: Anticipation, Integration, Continuity, Responsiveness, and Improvisation. This chapter will compare the two support systems, utilizing a decision matrix for each sustainment function, to determine which system will provide better sustainment for the aviation brigade on the modern battlefield.

ANALYSIS

ARMING

ANTICIPATION

Both systems allow the CSS leaders to anticipate the arming requirements on the battlefield. However, the current system lacks the manpower to be able to keep up with changing

demands of the aviation brigade. The DASB has greater flexibility built into the system that will allow it to anticipate the needs of the aviation brigade a much better.

Under the current system, the brigade S-4 handles all of the ammunition requests/forecasts. Then, the brigade S-4 coordinates with the DAO, the DISCOM and the FSB's to have the ammunition available in the right amounts, quantities and types, at the designated ATPs. He must then coordinate for pick up times by the various aviation units. Although the system is logical, it is a large job for one staff officer to handle. The DASB has a dedicated Class III/V platoon leader who can assist the brigade S-4 and act as a liaison between the brigade, the units, and the ammunition support units. Thus, the DASB increases the ability of the brigade to anticipate ammunition needs by increasing the manpower available to perform this task.

INTEGRATION

The integration of the arming assets is basically unchanged. The only difference is the availability of the Class III/V platoon in the DASB structure. The attack battalions and the cavalry squadron have retained their ammunition handling and moving assets. Although the DASB has additional personnel available, it does not gain an appreciable advantage in integrating these assets into the overall operation. The current system already has the ability

to ensure unity of effort and integration of assets up to battalion level. The DASB structure does not change this. Therefore, the current system is more advantageous than the DASB since it would not require any change in organization, personnel and equipment.

CONTINUITY

The DASB has a marked advantage in the area of continuity. Since the aviation brigade units retain their Class V assets, the only interruption in support would occur at the ATPs. With the Class III/V platoon dedicated to conducting the coordination for pick up of Class V between the ATPs and the aviation units, the likelihood for mistakes and confusion due to oversight or overwork by the brigade S-4 are reduced. This coordination will better enable the aviation brigade to continue twenty-four hour operations.

RESPONSIVENESS

As stated in chapter three, the aviation brigade units can respond well individually because they have retained their own assets within under their own command and control. However, because of changing doctrine which may require the aviation brigade to operate not only in the division rear, but also as a maneuver brigade with its own sector of responsibility, this dispersion of assets could cause severe problems. This would mainly be created through a lack of

command and control at the brigade level. With units dispersed across the battlefield, it would be difficult for the brigade S-4 to coordinate ammunition support requirements. The DASB, with a platoon dedicated specifically for this task, is better equipped and manned to control these operations.

IMPROVISATION

Finally, the DASB will allow greater flexibility and freedom to improvise because of the increased command and control that the Class III/V platoon provides. Although it has limited equipment assets, the increased personnel would be sufficient to provide adequate planning and coordination to adjust to the rapidly changing battlefield requirements.

SUMMARY

Overall, the DASB has several advantages over the current system when approached from a doctrinal point of view--see figure 5-1. Initially, the DASB only seems to offer just a couple of enlisted soldiers and some vehicles to help with the task of keeping the aviation brigade armed. However, after further scrutiny, the DASB offers more than just the Class III/V platoon. It provides another headquarters capable of coordinating and distributing this ammunition. This reduces the workload on the brigade S-4, allowing him to concentrate on supporting the current and future operations for the aviation brigade.

DECISION MATRIX*

ARMING

COA'S / CRITERIA	CURRENT LOGISTICAL SYSTEM	DASB SUPPORT CONCEPT
ANTICIPATION	2	1
INTEGRATION	1	2
CONTINUITY	2	1
RESPONSIVENESS	2	1
IMPROVISATION	2	1
TOTAL	9	6

*LOWEST NUMBER IS BETTER

FIGURE 5-1

FUELING

ANTICIPATION

The DASB is better equipped to anticipate the fueling requirements for the aviation brigade than the current system. The DASB has a dedicated Class III/V platoon that consolidates fuel forecasts; receives, stores, and distributes fuel; and coordinates for future fuel requirements. This is in contrast to the brigade S-4 who must perform all these functions himself along with all of the other duties inherent with that position.

INTEGRATION

The aviation brigade structure provides the maximum possible integration of resources. Each unit has its own refuel assets. Thus, no matter what the operation calls for, each unit will be able to support itself within its limited capabilities. This will provide the brigade commander the greatest possible freedom of action. Since the DASB structure takes the refuel assets out of the AHC and GSC and consolidates them under one headquarters, it reduces some of the flexibility that the aviation brigade used to have. The AHC and GSC will be dependent on the DASB for its refuel requirements. This will reduce the options available to the brigade commander, especially if he desires independent

operations by the AHC. Therefore, the current system has the advantage of over the DASB in integration.

CONTINUITY

The DASB has a distinct advantage over the current logistical system in continuity of operations. Because the refuel assets that are normally located in the MSB are under the direct supervision of the DASB commander, he can use these assets without fear of them being used to support another unit. He can allocate whatever resources are necessary to meet the current demands of the brigade. Also, the increase in fuel storage capability provides the brigade with a much larger quantity of fuel already on hand that is available to the brigade. This added fuel will enable the brigade to operate over a longer period of time without requiring resupply.

RESPONSIVENESS

The DASB is more responsive that the current logistical system. The refuel assets are closer in the DASB to the aviation brigade units, thereby reducing the time needed to move to and from the refuel site with the HEMMT tankers. Also, the increased storage capability makes the fuel readily available for use the brigade. Finally, the DASB will always be available to the aviation brigade. The brigade will not have to wait for other units for fuel because they

happen to have a higher priority for the MSB at that particular time. The only disadvantage that the DASB has that the current system does not is a reduction in mobility. The FSSP system, when full of fuel, is unmovable until the bags are emptied. Thus, if the DASB must move quickly, it would not be able to do so without leaving behind a large part of its storage capability. The current system does not have this problem. The majority of its assets are vehicular mounted and are easier to move. Although this immobility can be a major disadvantage, with proper anticipation of the battlefield requirements, the responsiveness that the DASB provides the aviation brigade will out weigh the disadvantages of temporary immobility.

IMPROVISATION

The DASB again has an advantage over the current system in this area. This is mainly because of the increased assets available within the DASB. Because the DASB has more equipment and personnel, it increases the number of options that are available to the commander to cope with a particular emergency or unforeseen requirement. A second reason for this is the advantage of having the majority of the storage capability under the direct command and control of the DASB commander. This centralized control enhances the ability of the DASB to coordinate and manage the available refuel assets.

SUMMARY

Overall, the disadvantages and advantages in the fueling arena favor the DASB--see figure 5-2. The organization provides a headquarters that is better able to anticipate what the needs of the aviation brigade will be. Although the integration of assets is not as good, it is still sufficient to accomplish the mission. Finally, the responsiveness that the DASB can give to rapidly changing situations provides the aviation brigade commander with more options open to him than the current system.

DECISION MATRIX*

FUELING

COA'S / CRITERIA	CURRENT LOGISTICAL SYSTEM	DASB SUPPORT CONCEPT
ANTICIPATION	2	1
INTEGRATION	1	2
CONTINUITY	2	1
RESPONSIVENESS	2	1
IMPROVISATION	2	1
TOTAL	9	6

*LOWEST NUMBER IS BETTER

FIGURE 5-2

FIXING

ANTICIPATION

Anticipating maintenance requirements is a strong point for both of these systems. This is mainly because under both systems, the units have a PLL available along with some maintenance capability. The units can schedule services, order parts, and adjust operations to accommodate the maintenance requirements. The stockage of the ASLs under both systems provides the required parts for both air and ground equipment and vehicles. Since neither system provides a distinct advantage in the area of anticipation, the current logistical system has an edge over he DASB. This is because there will be advantages of stability and familiarity if there is no change to the organization.

INTEGRATION

The integration of maintenance assets favored the DASB over the current system. Since the direct support assets that are normally found in the MSB are under the direct control of the DASB commander, he can allocate these assets to where the aviation brigade needs them the most without having to request them from the MSB commander. In this manner, the DASB commander can weight his maintenance effort where the greatest need is and reduce the

assets dedicated to other brigade units that do not have an immediate need at the time.

Under the current system that would be difficult. If the attack battalion needed assistance in fixing a ground vehicle, it would normally get that support from the maintenance support team from the MSB. But if that team was already being used by the AHC, the attack battalion would be out of luck. He could ask the cavalry commander, or the AHC commander, for help, but nobody would be required to assist unless the brigade commander directed it. The shifting of maintenance efforts around the brigade to meet the different requirements is almost nonexistent.

CONTINUITY

Both systems are able to provide continuous aviation maintenance support for the aviation brigade. Although the structures are very different, there is no degradation or advantage of one system over the other with regards to aviation maintenance. The aviation maintenance organization is basically the same so there should be relatively no change in that support from one system to the other.

The DASB does have a distinct advantage in providing continuous support for ground maintenance operations. Under the current system, each unit has its own organic maintenance assets to provide that support on a continual basis. However, the direct support maintenance that is so readily available

with the DASB is not available under the current system. The aviation brigade must compete with all of the other divisional units for support from the MSB. Since the MSB may have other priorities, it may not be able to provide the dedicated support that the aviation brigade will need.

RESPONSIVENESS

The responsiveness of the DASB will be much better than the current system. This is mainly due to the battalion headquarters which is available to take immediate steps to respond to the changing needs of the brigade. With the majority of the assets immediately available under his control, the DASB commander can allocate resources much quicker than the MSB can. In addition to quick response, the habitual relationship that will develop between the aviation brigade and the DASB will increase the effectiveness of both organizations by familiarity with each others standard operating procedures and maintenance practices.

There is one possible disadvantage in this area under he DASB concept. This in the reduction of the aviation ASL. If the ASL is reduced from its normal size of about 4,800 to approximately 3,000 lines, the possibility of a shortage of critical parts is likely. This may increase the time needed to acquire the parts needed, thus reducing the responsiveness of the DASB in providing aviation related spare parts.

IMPROVISATION

Consolidating the maintenance assets under the control of a single headquarters will make it easier for the DASB to improvise when the situation requires it than it would be for the aviation brigade. The DASB commander can react to changing situations, conditions, and requirements by changing the priorities of his companies, reallocating resources, and changing the main effort for support. But the commander can only do this because he controls all of the assets. If a change in effort was required under the current system, the brigade S-4 would have to request it from the MSB commander, who may or may not be able to respond effectively or in time.

SUMMARY

The overall advantages and disadvantages favor the DASB--see figure 5-3. With the reorganization of the maintenance assets, consolidation of equipment and supplies, and increased command and control, the DASB will be able to provide a better system for maintaining the equipment in the aviation brigade.

DECISION MATRIX*

FIXING

COA'S / CRITERIA	CURRENT LOGISTICAL SYSTEM	DASB SUPPORT CONCEPT
ANTICIPATION	1	1
INTEGRATION	2	1
CONTINUITY	2	1
RESPONSIVENESS	2	1
IMPROVISATION	2	1
TOTAL	9	5

*LOWEST NUMBER IS BETTER

FIGURE 5-3

CONCLUSIONS

After reviewing the Combat Service Support sustainment system for the aviation brigade and comparing it to the Division Aviation Support Battalion, it is clear that the Division Aviation Support Battalion will provide better support to the aviation brigade than the current system. Overall, the DASB provides the structure and framework to be a more responsive organization. The added battalion level staff provides a distinct advantage in planning, organizing, and monitoring the maintenance support for the brigade. It will be better staffed to anticipate requirements and provide continuous support. It provides a good framework from which the DASB commander can work in order to task organize and integrate the battalion's resources. This will maintain greater flexibility for the aviation brigade commander and provide him with more options to work with. Thus, he will be free to fight his brigade without having to worry about his logistics "tail". Finally, after the first round is shot and the best laid plans begin to fall apart, the DASB still maintains the most flexibility to improvise and make do with the available assets to best accomplish the mission.

The ability of the DASB to respond to the needs of the aviation brigade will become even more important as the modern battlefield increases in size and tempo. This was very evident during the DESERT STORM operations. The distances traveled in just a matter of a couple of days exceeded 100

miles. This required that ammunition and fuel be brought forward over that distance from the corps rear area. This means that the best the corps could do was to supply approximately one basic load of fuel and ammunition for the brigade per day. With these increased distances and high consumption rates for Class III, V, and IX, it would be nearly impossible for the current system to keep up with the brigade without some interruption or pause in operations in order to replenish these critical supplies.

Because the doctrine for employment for the aviation brigade is moving toward that of a maneuver unit, the DASB must be considered as the best alternative for providing the needed logistical support. Without it, the army will run a great risk of losing its most powerful weapon, the AH-64, due to lack of fuel and ammunition.

RECOMMENDATIONS

The DASB organization is an excellent concept that will provide the aviation brigade continuous and effective support into the future. Its flexibility will provide the basis for integrating and adopting the Airland Battle Future doctrine. However, the are several areas of concern that arose during the research of this paper.

It is recommended that the contents and size of the air ASL be reevaluated. The aviation brigade's assets are too valuable to be grounded waiting for parts because the ASL was

not authorized to stock them. It is understood that the ASL cannot stock a massive amount of parts due to space, money, and mobility requirements. However, it is felt that 3,000 lines will definitely be insufficient to meet the demands. The savings made in maintaining the helicopters at the required operational readiness rate, reducing maintenance down time, and extra maintenance man hours, could pay for the increased cost.

Another area of concern is the mobility of the Class III/V platoon. Although the Class III/V platoon needs to maintain a lot of fuel on hand to maintain even a couple of days of supply on hand, it still needs to maintain some semblance of mobility. With the fast paced operations and great distances that are foreseen on the next battlefield, the current DASB structure would require that the Class III/V platoon leave a large portion of its stocks on the ground until it was depleted. Since the fuel bladders cannot be moved until they are empty, it makes these assets vulnerable to rear area threats from both ground and air attacks and unable to move quickly in response to the change tactical situation.

One way to alleviate this is to expedite the transition of the air fleet to JP-8 from JP-4 in the CONUS based divisions. Since both the M1 tanks and M3 Bradley Fighting Vehicles run on JP-8, there would no longer be a need to segregate the fuels. If the DASB had too much fuel on

hand, it could top off its tankers and provide fuel to ground vehicles and aircraft. Thus it could deplete its stocks quicker if necessary in order to move. Then when it arrived at its new location, it could refill its fuel bladders from the corps petroleum supply company. This would also reduce the workload on the corps since it could use all of its large tankers interchangeably with the ground and air units. It would not have to worry about purging certain tankers in order to provide the appropriate fuel to a particular customer. This will become particularly important when the corps petroleum supply company starts to take losses due to either normal wear and tear or enemy action.

AREAS OF FURTHER STUDY

The DASB is a good start for investigating the changing support requirements of the aviation brigade. As the Army moves forward and begins to develop Airland Battle Future doctrine, the DASB concept, and in fact the whole CSS concept for the aviation brigade, needs to be reviewed and updated. With the fast moving, non-linear battlefield that is forecast for tomorrow's battle, the CSS system must be able to keep up. Perhaps the sustainment function of Protection will begin to take on an even greater significance with no rear area or secure lines of communication.

Another area to look at is the ability of the division to evacuate helicopters from the battlefield. When they can

fly, its not a problem. But if an aircraft must have major maintenance performed on it and cannot fly, it presents certain problems. One such problem is the inability to load a UH-60A or an AH-64 on the normal recovery flatbed trailers that the AVIM company has. If tne AVIM cannot move the helicopter, then it must either be fixed in place or destroyed, depending on the tactical situation.

Air evacuation of the aircraft could be possible, depending on how far down the airframe has been stripped. But it still requires time for the airframe to be put back together enough so that it will not sustain structural damage when it is lifted. This also requires assets outside the division, such as Corps aviation support, which might not be available due to other high priority missions.

Another problem related to this is the phase maintenance program. Every aircraft in the army inventory must have what can be referred to as a major overhaul performed after a specified number of flight hours. It is normally performed by the unit that owns the aircraft. If the unit must move while in the middle of one of these phases, it is impossible to take that aircraft with them unless they put it back together again, which is no small task. The processes could take as long as several days, or even over a week. Therefore, another system must be in place during wartime to allow the units to perform the required maintenance but still retain some semblance of mobility.

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